DOCUMENT RESUME

ED 052 520 80 EA 003 543

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TITLE Fiscal Capacity and Educational Finance: Variations Among States, School Districts and Municipalities. National Educational Finance Project Special Study Number 10.
INSTITUTION National Educational Finance Project, Gainsville, Fla.; Wisconsin Univ., Madison. Dept. of Educational Administration.
SPONS AGENCY Office of Education (DHEW), Washington, D.C.
PUB DATE Sep 70
NOTE 286p.;Complete version of Chapter 10 in EA 003 538 See above

EDRS PRICE EDRS Price MF-$0.65 HC-$9.87
DESCRIPTORS County School Systems, Data Analysis, Demography, Economic Factors, *Educational Economics, *Educational Finance, *Educational Planning, Expenditures, *Financial Support, *Fiscal Capacity, Income, Municipalities, Research Design, School Districts, State Surveys
IDENTIFIERS Elementary Secondary Education Act Title V, ESEA Title V

ABSTRACT

The major objectives of this NEFP satellite study were to identify in the fiscal capacities of school districts serving areas of varying economic and demographic characteristics and to assess the effect on the fiscal capacity of school districts and municipalities when all expenditures for public services by local government units are considered. Seven categories of school districts were defined according to the type of area served by the district. Factor analysis revealed that revenue from State sources was the most important contributor to variation among the categories and that expenditures for education and fire protection were the variables that contributed most frequently to significant differences among categories. Related documents are EA 003 538-542. Funds for this research were provided by an ESEA Title V grant. (Author/RA)

FISCAL CAPACITY AND EDUCATIONAL FINANCE

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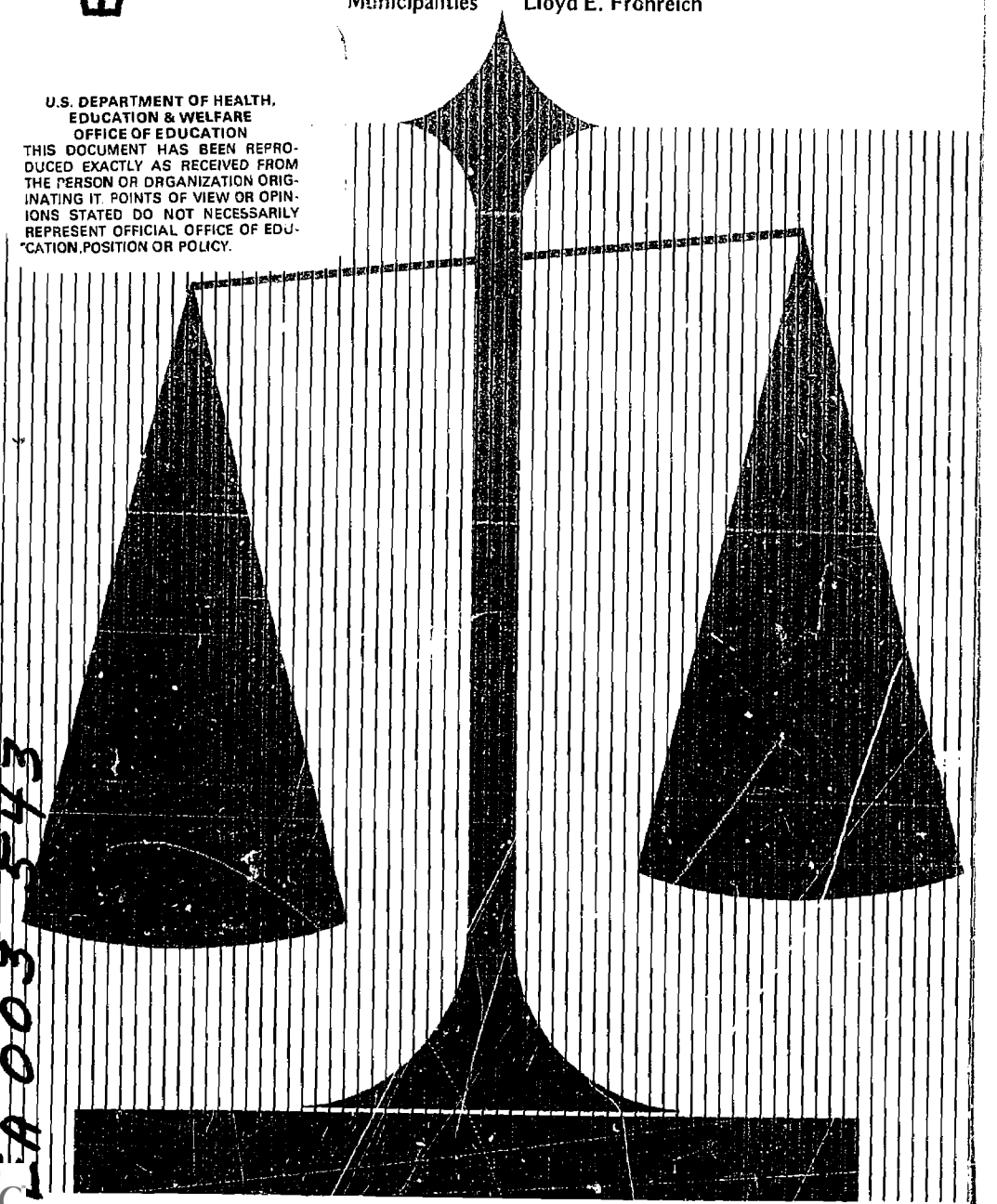

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National Educational Finance Project
Special Study Number 10

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September, 1970

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Fiscal Capacity and Educational Finance: Variations
Among States, School Districts and Municipalities

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2. EDUCATIONAL PROGRAMS FOR EXCEPTIONAL CHILDREN: Resource Configurations and Costs

   Richard A. Rossmiller, James A. Hale and Lloyd E. Frohreich

3. EDUCATIONAL PROGRAMS FOR THE CULTURALLY DEPRIVED—Need and Cost Differentials

   Arvid J. Burke, James A. Kelly and Walter I. Garms

4. FINANCING, VOCATIONAL EDUCATION IN PUBLIC SCHOOLS

   Erick L. Lindman and Arthur Berchin

5. ADULT AND CONTINUING EDUCATION: Needs, Programs and Costs

   J. Alan Thomas

6. THE COMMUNITY JUNIOR COLLEGE: Target Population, Program and Costs, and Cost Differentials

   James L. Wattenbarger, Bob N. Cage and L. H. Arney

7. FINANCING PUBLIC ELEMENTARY AND SECONDARY SCHOOL FACILITIES IN THE UNITED STATES

   W. Monfort Barr, K. Forbis Jordan, C. Cale Hudson, Wendell J. Peterson and William R. Wilkerson

8. SCHOOL FOOD SERVICE AND NUTRITION EDUCATION—Status, Needs, Projections, Costs

   Robert J. Garvue, Thelma G. Flanagan and William H. Castine

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10. FISCAL CAPACITY AND EDUCATIONAL FINANCE: Variations Among States, School Districts and Municipalities

    Richard A. Rossmiller, James A. Hale and Lloyd E. Frohreich

11. THE RELATIONSHIP OF SCHOOL DISTRICT REORGANIZATION TO STATE AID DISTRIBUTION SYSTEMS

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Financed by Funds Provided Under the Elementary and Secondary Education Act of 1965 (Public Law 89-10, Title V, Sec. 505) and Sponsoring States.

ACKNOWLEDGEMENTS

The assistance and counsel provided by state education agency personnel in the states included in this study were instrumental in bringing the project to a successful conclusion. We are especially indebted to the following state department of education officials for providing access to school district financial reports and state department of education publications covering the 1961-1962 and 1966-67 school years, and for their assistance in locating data:

Florida

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Wisconsin

Honorable William C. Kahl, Superintendent of Public Instruction
Archie A. Buchmiller, Deputy State Superintendent
Alan W. Kingston, Assistant Superintendent, State Aids and School Finances

Appreciation also is expressed to the following persons for their contributions to the study:

Will Myers, Advisory Commission on Intergovernmental Relations, who kept us informed on the Commission's studies of fiscal capacity and provided advice, counsel, and encouragement in the development of this study.

John A. Thompson, Director, Graduate Studies in Education, University of North Dakota, for his assistance in obtaining the needed data for the North Dakota school districts which were included in the sample.

Charles D. Dzuiban, currently Assistant Professor of Education, Florida Technical University, who directed the preparation and machine processing of the data utilized in this study.

We also wish to acknowledge the diligent efforts of the five men who served as project assistants for this study during the past year:

Ronald W. Bentley, Assistant Superintendent, Greenfield Public Schools, Greenfield, Wisconsin

Lyle R. Bruss, Space Management Analyst, The University of Wisconsin–Green Bay, Green Bay, Wisconsin.

Jordan C. Nash, Director of High School Relations and Student Services, Richland Campus, Wisconsin State University–Platteville, Richland Center, Wisconsin

Lee F. Olsen, Superintendent of Schools, Monroe, Wisconsin

Roger L. Reimer, Graduate Student, Educational Administration, The University of Wisconsin, Madison, Wisconsin

Their willingness to spend long, tedious hours in gathering and recording data, and their sound judgment with regard to the handling of the data, made them indispensible partners in this effort. Mr. Reimer's assistance in data processing and analysis during the final stages of the project was particularly important to the timely completion of the study.

For the errors of omission and commission which remain in spite of the conscientious efforts of our colleagues to steer us in the proper direction, we accept full responsibility.

R.A.R.
J.A.H.
L.E.F.

Madison, Wisconsin
September, 1970

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

One time-honored criterion which has been applied in evaluating the methods used by a government to allocate among its citizens the burden of meeting the government's financial needs is that of equity or fairness. The first canon of taxation mentioned by Adam Smith in 1776 in his WEALTH OF NATIONS was that taxes should be equal or equitable. Smith's early concern for equity is shared by modern writers, who also have stressed the importance of equity or fairness as a principle of taxation.[1]

While there is virtually universal agreement that the costs of government should be distributed equitably among taxpayers, the question of what constitutes equitable treatment is far from resolved, as is the question of what criteria and procedures should be employed to assess equity. As Eckstein has noted, "What we mean by a fair tax system is not a question of technical economics but of personal philosophy."[2] A vast volume of literature has developed with regard to the notion that equity is best served when taxes are apportioned according to two principles: (1) an individual's ability to pay and (2) the benefits received by an individual from governmental services. Unfortunately, with regard to benefits received there is no way in which all of the beneficiaries can clearly be identified in the case of many public services—for example, national defense or education—and even in some cases where the beneficiaries can be identified, application of this principle would not be feasible—for example, children in an orphanage. With regard to ability to pay the question of what constitutes acceptable evidence of ability to pay is still debated; and the question of whether ability to pay rises proportionately with income remains unresolved.[3] Also worth noting is the fact that equity must be viewed not merely in terms of the taxes paid directly by the individual; it must be viewed in terms of the ultimate distribution of the burden among various persons in society, i.e., the incidence of the tax.[4]

The problem of achieving equity in taxation is especially difficult in a federal system of government. Buchanan has observed that "a distinct group of problems immanently arises when a single political unit possessing financial authority in its own right contains within its geographical limits small political units also possessing financial authority."[5] When two or more constitutionally independent fiscal systems operate upon the resources of a single taxpayer, as is the case in the United States, equity or fairness is dependent on the total impact of all taxes, not just those levied by a single taxing jurisdiction. Thus, when one examines the fiscal capacity of a local unit of government such as a school district, one must bear in mind that he is viewing only a portion of the taxation picture.

The importance of striving for equity in apportioning the burden of supporting education (school taxes) has long been recognized by writers in the field of school finance. Cubberley cited examples of extreme inequalities in the fiscal capacity of local school districts and concluded that "any attempt at the equalization of the opportunities for education, much less any attempt at equalizing burdens, is clearly impossible under a system of exclusively local

taxation."[6] Strayer and Haig made explicit provision for equalizing the burden of educational support in their recommendations for what has come to be known as the "foundation program" when they stated that if equalization of educational opportunity and equalization of school support were to be achieved, it would be necessary "(1)...to furnish the children in every locality within the state with equal educational opportunities up to some prescribed maximum; (2) to raise the funds necessary for this purpose by local or state taxation adjusted in such manner as to bear upon the people in all localities at the same rate in relation to their tax-paying ability..."[7]

More recently, authorities in the field of educational finance have recognized that since school districts utilize essentially the same tax base as other units of local government, the property tax, it is important to consider the total tax levy, not just the tax levy for school purposes, when considering the extent to which equity is achieved in various programs for financing education.[8] Attention also has been called in recent years to the increasing fiscal demands and declining tax bases of the central cities in metropolitan areas.[9] At the same time, however, concern has been expressed for the fiscal problems and difficulties encountered by municipalities and school districts which serve sparsely populated and/or impoverished rural areas.

Attacks have been launched in a number of states in recent years in which the constitutionality of statutory provisions for support of public elementary and secondary schools has been challenged. At the heart of the argument advanced in most of these cases is the contention that the fiscal resource made available by the state to various types of local school districts are unequal; that because of this fact, reasonable equality of educational opportunity is denied to school pupils who reside in certain school districts; and consequently, that these pupils are being denied equal protection under the law. Although no court of record has yet ruled that a state's statutory provisions for financing education are unconstitutional, the evidence which has been presented lends strong support to the contention that equality of educational opportunity in the United States is little more than a myth.[10]

A vision of equality of educational opportunity guided the leaders who worked to develop public school systems which exist today in the various states. Equally clear is the fact that the quality of educational opportunity a school district can provide is conditioned, at least in part, by the fiscal resources to which that school district has access. At the same time, the principle of equity in taxation requires equal treatment of equals, i.e., that those in similar circumstances be treated similarly. Since education is legally regarded as a state function,[11] the principle of equity requires that the burden of taxes in support of education be shared equitably by all the state's taxpayers.

If reasonable equity in taxation for the support of public education is to be attained, however, it is imperative that the common fiscal characteristics of various types of school districts be compared and contrasted to identify similarities and differences. And since the bulk of local revenue for the support of education is obtained from a tax base which supports many other public services, it is important to consider the total burden on that tax base if equity among the state's taxpayers is to be attained. Without such data, it is virtually impossible to devise support systems for education which will provide reasonable

equality of educational opportunity and, at the same time, afford reasonable equity in the treatment of taxpayers. Although special pleadings have been made for certain types of school districts (particularly those serving urban and rural ghettoes), relatively little is known concerning similarities and differences in the fiscal capacity and public service demands which are associated with the areas served by various types of school districts.

Objectives

This research was undertaken primarily to provide data needed to fulfill the National Educational Finance Project's commitment to develop and evaluate the impact of school finance models on various types of school districts. The study was designed to accomplish three objectives:

1. To identify and summarize the most recent available data concerning the relative fiscal capacity and tax effort of the fifty states.

2. To identify variations in relative fiscal capacity and tax effort among school districts serving areas which display varying economic and/or demographic characteristics when alternative measures of fiscal capacity are employed.

3. To determine the effect on relative fiscal capacity and tax effort among school districts serving areas which display varying economic and/or demographic characteristics when expenditures for public services by local units of government are considered.

This study concentrated on the fiscal aspect of equalization. The demand for public services was considered only insofar as this demand was reflected in expenditures by school districts and other local units of government. The data provided by other National Educational Finance Project studies concerning demands and costs associated with educational programs for various target groups will provide planners with additional detail relative to the objective of achieving equity in educational opportunity. This study will attempt to provide additional detail relative to the objective of achieving fiscal equity.

The terms "fiscal capacity" and "tax effort" will be used throughout this report. For the purposes of this study, fiscal capacity was defined as a quantitative measure reflecting the resources which a taxing jurisdiction is taxing, or could tax, to raise revenue for public purposes. Tax effort was defined as a quantitative measure of the extent to which a taxing jurisdiction uses its capacity to raise revenue through taxation.

Related Research

There has been a virtual plethora of research conducted over the past fifty years which bears upon the topic of fiscal capacity. Researchers in the area of educational finance initially concentrated almost exclusively upon the fiscal

capacity and expenditure patterns of local school districts with some attention given to the state. During the past decade, however, increasing attention has been paid to questions of interdistrict and interstate equity; to the interrelationship of the school district and the municipality with which it is associated; to methods of classifying and comparing school districts; and to the determinants of spending for education.

Providing a comprehensive review of all of the research bearing upon the fiscal capacity of school districts and other governmental units is not our purpose in this section. Rather, we will identify some of the major studies which helped point the direction and have given purpose to this study. The review will be organized around studies which relate to definition and measurement of fiscal capacity and studies concerned with patterns and determinants of school and municipal revenues and expenditures.

Definition and Measurement of Fiscal Capacity

The most recent definitive treatment of the concepts of fiscal capacity and tax effort was published in 1962 by the Advisory Commission On Intergovernmental Relations. The Commission stated:

> Fiscal capacity is a quantitative measure intended to reflect the resources which a taxing jurisdiction can tax to raise revenue for public purposes. Tax effort is a closely related measure quantifying the extent to which the government actually uses its capacity to raise revenue through taxation.[12]

The Commission went on to note:

> The capacity of a people to contribute to the support of their government is determined by many factors including the population's total resources—it's income, wealth, business activity, etc.; the demands made upon these resources, including those made upon them by other governmental jurisdictions; the quantity and quality of governmental services provided and the importance the people assign these services as compared with their private wants. The evaluation of some, probably most of these factors, involves subjective judgments particularly for governments which function with the consent of the governed. The level of taxation people deem to be reasonable and its political leadership finds acceptable depends, in addition to the factors cited, upon innumerable less tangible elements of time and circumstance. The willingness to pay taxes is likely to be enhanced if the tax instrument, with its level of tax rates, is regarded as fair and conforms with familiar established institutions; if the public need for the program is acute, as in an emergency; and if the governmental program has widespread public support.[13]

There are two basic approaches to the problem of measuring fiscal capacity. One approach utilizes economic indicators, particularly measures of income from which taxes can be paid, and involves comparisons of state or local taxing jurisdictions on the basis of such indicators. The other major approach is that of evaluating the tax bases which are available to a taxing jurisdiction, estimating the amount of revenue these tax bases would produce at various rates of taxation, and comparing state or local taxing jurisdictions on this basis.[14]

Early studies in the field of educational finance illustrate each of these two approaches. In one of the earliest reported studies, Norton[15] measured the relative taxpaying ability of the states by calculating the economic power behind each pupil. The Council of State Governments,[16] the U.S. Office of Education,[17] and the National Education Association,[18] have utilized measures such as income payments to individuals standardized on a per child or per capita basis, state and local revenues as a percent of total income, and percent of personal income expended for education to measure and rank the relative taxpaying ability and/or tax effort of the states. Examples of the "representative tax system" approach are afforded by Chism,[19] who calculated the relative tax paying ability of the states under the Model Tax Plan of the National Tax Association, and by Mort and Newcomber,[20] who used the computed yield of a "model tax system" to develop an index of the relative tax paying ability of the states.

More recently, the Advisory Commission on Intergovernmental Relations used both the "economic indicator" approach and the "representative tax system" approach in its study of state and local fiscal capacity.[21] The Commission's study demonstrated that the relative fiscal capacity of a state can vary widely depending upon the measure of fiscal capacity which is employed. In summarizing its findings, the Commission stated:

> The results of this study of fiscal capacity and tax effort indicate that conclusions about the relative capacity and effort position of a number of States are strongly dependent on which index is used. States in the Southeastern part of the United States have far less fiscal capacity than other areas, and those in the Far West have far more, no matter what index is used. The relative-capacity position of New England and of the Plains, Rocky Mountain, and Southwestern states appears quite different, however, when different indexes are employed.[22]

Martin,[23] in a report prepared for the National Education Association, computed an "average rate" by dividing the total tax collected by all states imposing a given tax by the total personal income in those states. He then multiplied the computed "average rate" by the total personal income in each state to estimate the potential collections if this particular tax were levied. The difference between the potential collections and actual collections was labeled "potential additional revenue".

Research which has been conducted on the "equalization effects" of state grant-in-aid systems also has implications for studies of fiscal capacity. Hickrod and Sabulao summarized concisely the major problems involved in such research when they stated:

> In the first place there is no commonly accepted operational definition of "equalization" despite the fact that school finance specialists have talked about the concept for decades. To some it means the equalization of expenditure levels, to others the equalization of tax effort, and to still others the grander notion of equalizing educational opportunities. Probably to most it has something to do with the principle of distributing state funds in inverse

relation to the "wealth" or "ability to pay" of a district. Unfortunately, there is also little agreement on an operational definition of "ability to pay". Present thinking in the field does seem to be more favorable toward a mixture of property valuations and income, and property valuations, income, and the sales tax base, rather than simply property valuations alone. There is no agreement on the proportions in this "mixture".[24]

The problems involved in measuring equity in school support would be simplified if the two principle measures of fiscal capacity—income and property valuation—were closely correlated. But they are not. For example, in a study of the 104 largest school districts in Wisconsin,[25] the product moment correlations found between equalized valuation of property per capita and two other measures of wealth, reported personal income per capita and retail sales per capita, were .28 and -.19, respectively; the correlation between equalized valuation of a property per capita and mean family income was .27; and the correlation between equalized valuation of property per capita and effective buying income per capita was .23. However, a much higher correlation was found between equalized valuation of residential property and mean family income; the product moment correlation for all districts was .85 and ranged from .46 in agricultural service centers to .98 in established suburbs. A high correlation also was found between equalized valuation of residential property per capita and effective buying income per capita; the correlation for all districts was .81 and ranged from .53 in medium cities to .91 in established suburbs.

Farner and Edmundson[26] used data obtained from the *1962 Census of Governments* and from *Sales Management* to examine relationships between principal tax bases (property, income, and sales) in each of the 411 counties of eleven western states. They found that the rank order correlation coefficients on property per pupil versus income per pupil ranged from -.14 to .31; rank order correlation coefficients on income per pupil versus retail sales per pupil ranged from .33 to .72.

Two statistical procedures have generally been employed to measure the equalization effect of state grants-in-aid.[27] The most common procedure has been the use of the product moment correlation coefficient or the rank order correlation. However, it has been demonstrated that the Gini index (the "index of concentration") can also be used to measure the effect of equalization aid, as can the regression coefficient. However, both the product moment correlation coefficient and the regression coefficient are based on the assumption that equalization aid is distributed in a linear manner through the whole range of wealth distribution, while the Gini index is not tied to this linear assumption.

A third group of studies which bear upon fiscal capacity of school districts also should be noted. Several researchers have used economic and population factors to develop indices of the tax paying ability of local school districts. The development of an index of tax paying ability was a necessity in states which employed equalization formulas to apportion state funds to local school districts, but which did not have adequate provisions for the accurate assessment of property in local school districts. Cornell's[28] pioneering study demonstrated that factors such as population, retail sales, motor vehicle registrations, gross

production, number of individual income tax returns and postal receipts could be used to develop a measure of the relative tax paying ability of local school administrative units. In discussing the use of such indices, Johns stated:

> It has been successfully demonstrated that economic indices can be used as determiners of the relative tax paying ability of local school districts, especially if such districts are relatively large. Economic indices can be used also in states with relatively small school districts if there is a county-wide assessing authority. The economic data necessary for a valid index of tax paying ability are difficult to secure for a political sub-division smaller than a county.[29]

Patterns and Determinants of School and Municipal Expenditures

Descriptive studies of patterns of school expenditure have long been common. Data with regard to patterns of school expenditures in various types of school districts are available on regional, state and national bases. Publications of the United States Office of Education provide information concerning patterns of school expenditures as well as describing trends in expenditure patterns over time.[30] The National Education Association also provides information concerning patterns and trends in school expenditures through its annual publications.[31] For the past eleven years, *School Management* has been publishing a "Cost of Education Index" which provides information concerning patterns of school expenditure in various regions of the United States and in various size and wealth categories of school districts.[32] At the state level, state departments of education and/or state education associations regularly publish information concerning the expenditure patterns of school districts in their respective states.

It is only in recent years that researchers have turned their attention to the systematic study of school and municipal expenditures using sophisticated statistical models and techniques. A great deal of research concerning the determinants of expenditures by school districts and municipalities has been reported during the past fifteen years by educators, economists, sociologists and political scientists.

Studies of Municipal and County Expenditures

Brazer's[33] studies of city expenditures served to stimulate a new line of research activity and are noteworthy in several respects. Brazer created seven categories of cities based upon an analysis of 462 cities, villages, and other incorporated places which had populations in excess of 25,000 persons in 1950. Two categories of core cities were identified: those with populations greater than 250,000 were identified as major metropolitan areas; those with populations less than 250,000 were identified as minor metropolitan areas. A third category, the independent city, included all cities with populations over 25,000 which were not included in a standard metropolitan statistical area. The fourth category, major resort city, was identified on the basis of having reported hotel receipts equaling or exceeding $60 per capita in the *1948 Census of Business*. Brazer's remaining three categories were suburbs. Suburbs which were above the median for all suburbs in the sample with regard to the number of persons employed in manufacturing were classified as industrial suburbs. The remaining

suburbs were classified as either high or low income residential suburbs on the basis of whether family income was higher or lower than the median for all residential suburbs.

Brazer found that population density, median family income, and per capita intergovernmental revenue were significant determinants of per capita city expenditures. As Break[34] has noted, two major difficulties confront the researcher attempting nationwide analysis of city expenditures: (1) the allocation of functions between state and city governments varies considerably from state to state, and (2) there is considerable variation from city to city in the allocation of functions to counties, school districts, special districts, and other overlapping governmental units. Brazer's study of 462 cities dealt with the first problem to some extent by including intergovernmental revenue as a variable.

To handle the second problem, Brazer conducted a special study in which he obtained data with regard to expenditures made during 1953 by all local governments operating in forty metropolitan areas which had populations in excess of 250,000 in 1950. For this group, Brazer found that per capita intergovernmental revenue continued to be an important determinant of expenditures and that population density correlated positively at a significant level with expenditures for police, fire, and sanitation, and correlated negatively at a significant level with expenditures for highways. Median family income was found to be a statistically significant determinant only of expenditures for education and recreation. Brazer was able to explain 41 per cent of the variation in per capita current educational expenditures in the forty large metropolitan areas he studied. His most potent predictors of educational expenditures were median family income, average daily attendance, and state aid received.

Following the Brazer study, reports of three extensive studies of local finances in individual metropolitan complexes (St. Louis, Cleveland, and New York) appeared in 1961.[35] Schmandt and Stephens[36] analyzed expenditure patterns of all of the 3,096 counties and county-equivalent areas in the United States. They utilized data obtained from the *1957 Census of Governments* to group expenditures by all local units within each county. Wide differences were found to exist in local government outlays from region to region, both in total and by functional category. State aids emerged as the most important single factor influencing total spending per capita, followed by median family income. Per capita expenditures tended to rise in all functional categories as median family income increased. The percentage of total expenditures allocated to individual functions showed a clear relationship to population size. However, neither population size nor population density appeared to affect total per capita spending appreciably, although they did show significant positive relationships with expenditures for such distinctively urban functions as fire protection, police protection, and sanitation.

Boelaert[37] reported the results of a study of the effect of various types of consolidation on inequality of fiscal capacity in the Milwaukee Standard Metropolitan Statistical Area (SMSA). He used an index of fiscal capacity in which property values received a weight of 84 per cent and adjusted gross income received a weight of 16 per cent. Gini coefficients were utilized to analyze inequality of tax capacity. It was found that, as measured by per capita

adjusted gross income, substantial inequality existed under the prevailing governmental structure. It was further found that the inequality coefficient would be reduced by one-half if all communities of less than 2,000 population were consolidated with an adjacent community, that further consolidation up to 5,000 inhabitants would not further reduce the inequality coefficient, and that substitution of county government for local governments would greatly reduce the Gini coefficient. Inequality coefficients for property values were found to be lower than those for adjusted gross income, and it appeared that even modest consolidation programs would be quite effective in reducing inequality in property values.

In its recent study of metropolitan social and economic disparities,[38] the Advisory Commission on Intergovernmental Relations utilized 190 standard metropolitan statistical areas and defined the portion of a SMSA which remained after subtracting its central city as "suburban". (A standard metropolitan statistical area, as defined by the Bureau of the Census, consists of a county or group of contiguous counties which contain at least one city of 50,000 inhabitants or more, or "twin-cities" with a combined population of at least 50,000.) It was recognized that considering all area outside of the central city of a SMSA as suburban means that, in cases where only a small portion of a county is urbanized, a substantial amount of rural area might be included. In summarizing its findings, the Commission stated:

> . . .economic and social disparities indeed exist among central cities and suburban communities. However, these disparities vary from region to region and from SMSA to SMSA.
>
> The classic dichotomy of the poorer central city contrasted with the comfortable suburb does not hold up when the populations involved are analyzed by region and size of metropolitan area. Major elements of the dichotomy—education, income, employment, and housing—fit the stereotype consistently only in the largest metropolitan areas and those located in the Northeast. But in the South and West, the pattern tends to run the other way.
>
> Low income is a problem of equivalent importance in cities and suburbs except in the large and Northeast SMSA's where it is definitely more of a problem in the central cities.[39]

Studies of School District Expenditures

In 1960, Hirsch[40] reported the results of his study of the determinants of expenditures per pupil in twenty-seven St. Louis County, Missouri school districts during the 1950's. Hirsch attempted to hold school quality constant in his investigation and also explored the possibility that curvilinear relationships existed among the variables. Hirsch was able to explain 85 per cent of the variation in local school expenditures. He found that the most potent determinants of educational expenditures were (1) assessed valuation of property, (2) an index measuring the quality of public education, (3) the ratio of high school pupils to all pupils in average daily attendance, and (4) school size (entered in the equation in quadratic form).

Sacks and Hellmuth,[41] as a part of their extensive study of governmental finance in the Cleveland metropolitan area, examined school expenditures by thirty-two school districts in Cayahoga County, Ohio. Their expenditure model accounted for 87 per cent of the variation in current operating expenditure per pupil in average daily membership (ADM) in these thirty-two school districts. The most potent predictors of educational expenditures identified by Sacks and Hellmuth were (1) an Ohio levy on intangibles per pupil in ADM, (2) state aid per pupil in ADM, and (3) property valuation per pupil in ADM.

Studies at Standford University—In 1961, James[42] published the first of several studies of educational finance conducted at Stanford University. In addition to examining variations in school revenue patterns in five states (California, Nebraska, New Jersey, Washington, and Wisconsin), James also explored some institutional, social and economic variables which might affect expenditures for education. Several methods of categorizing school districts were examined, including one based on the categorization of cities developed by Brazer.

Insights gained in James' initial study were exploited in a second study involving a sample of ten states.[43] Measures of wealth (equalized valuation of property, median family income, and percent of owner-occupied housing), measures of aspiration (median years of school completed by the population age 25 and over, percent of labor force unemployed, percent of population nonwhite, percent of county population living on rural farms, and percent of elementary school children attending private schools), and measures reflecting institutional factors (percent of total school revenue from state sources, fiscal dependence/independence, and state in which the school district was located) were used in regression equations to predict current expenditure per pupil in average daily attendance. The eight variables used to measure ability and demand factors accounted for 43 percent of the variation in expenditure per pupil in the 589 school districts included in the study. However, inclusion of the dummy variable to represent the state in which the school district was located raised the multiple correlation coefficient to .88, thus explaining 77 percent of the total variation in expenditure per pupil in ADA. The most powerful predictors of expenditure were found to be median family income, property valuation, percent unemployed (negatively related), percent rural (negatively related), and owner-occupied housing (negatively related).

In a third study, James explored determinants of educational expenditure in large cities of the United States.[44] A sample consisting of 107 of the 119 largest school districts in the United States was utilized. Socio-economic data were obtained from publications of the Bureau of the Census; educational expenditure data were obtained from U.S. Office of Education reports; and property tax data were gathered from local school districts, state tax commissions, and from the *Census of Governments*.

In cases where a school district's boundaries were not coterminous with those of the city, a map showing the school district's boundaries was compared with census tract maps of the areas to determine which census tracts were included in the school district. Two sets of data were gathered for the noncoterminous districts. One set consisted of data laboriously obtained from the census tracts; the other consisted of readily available data from the population center that

appeared to be most representative of the district. Two multiple regressions were then run for each of the noncoterminous districts; one using the census tract data gathered for the district, the other using readily available data for the population center most representative of the district. It was found that neither the multiple correlation coefficient nor any of the individual regression coefficients differed significantly in the two regression equations, indicating that data for the population center most closely associated with a school district accurately reflects the situation in the school district.[45]

A multiple regression analysis using approximately the same variables to represent ability and demand factors as were used in James' second study produced a multiple correlation coefficient of .84, accounting for approximately 71 percent of the variance in expenditure per pupil. Adding data concerning governmental variables to the regression equation resulted in explanation of a total of 73 percent of the variance, an addition of only 2 percent. However, addition of a variable expressing the region of the country (East, South, Midwest, or West) in which a district was located enabled explanation of 85 percent of the variance in expenditure per pupil in the 107 districts. The variables which were found to be the most effective predictors of expenditure were (1) percentage of labor force unemployed, (2) median family income, (3) percentage of owner-occupied housing (negatively related), (4) median years of schooling of adults, (5) property valuation per pupil and (6) percentage of pupils attending private schools.

Studies at Syracuse University—During the early 1960's several significant studies dealing with the economics and politics of public education were conducted at Syracuse University under a grant from the Carnegie Foundation. Among the Syracuse studies of particular interest are those by Burkhead[46] and by Bloomberg and Sunshine.[47] Burkhead explored the framework in which local tax and expenditure decisions are made and examined the behavior of economic, political and administrative variables that determine the responsiveness of state and local sources of tax support. Bloomberg and Sunshine conducted extensive case studies of four somewhat dissimilar types of suburban communities to obtain information concerning expenditures and effort in support of education.

Miner's[48] study of social and economic factors in expenditures for public education is particularly relevant to the current study. His monograph included a comprehensive review of empirical studies directed toward the identification of determinants of public expenditures.[49] Miner utilized a large sample of school districts drawn from twenty-three states. He obtained data on four dependent variables (total current expenditures per capita, local expenditures per capita, total current expenditures per pupil, and local expenditures per pupil) and on twenty-two independent variables. The array of independent variables included several variables reflecting "demand elements", a number of variables reflecting "supply elements", and a third group of variables reflecting "legal differences" among states. An important contribution of Miner's study was the inclusion of expenditures per pupil from local tax sources as a dependent variable in addition to the commonly employed dependent variable of total current expenditures per pupil. In interpreting the findings obtained from the regression analysis of the overall sample, Miner stated:

An imperfect but discernable pattern emerges from these regressions and partial correlation coefficients. Differences between coefficients for total and local expenditures appear to stem primarily from the nature of state provisions for grants-in-aid to local schools. As a consequence of efforts to provide some degree of equalization, such aid generally is granted inversely to local ability to pay and directly with conditions that indicate higher cost. These arrangements result in a pattern in which the contribution to educational expenditures by the local community varies moderately in accordance with its ability to pay and the costs of total expenditures, however, are affected strongly by grants-in-aid based on various formulas for the equalization of educational services among school systems within a state, thus reducing the influence of local factors. The statistical analysis shows that in contrast to local expenditures, total expenditures vary directly in proportion to the economic capacity of the state, the relative number of children to be educated in local schools, the proportion of pupils in secondary schools, and the salary level of beginning teachers, and are inversely related to density, dependent school organization, and location in a Standard Metropolitan Statistical Area.[50]

Separate regression analyses were performed for each state included in the sample and the variables found to be predictive of expenditures differed from state to state.

Studies at the University of Wisconsin—Peterson and his colleagues[51] used a modification of the Brazer taxonomy to categorize Wisconsin school districts in their study of the impact of state support programs. Their six classes of school districts were based on the characteristics of the area served by the school district. The categories included:

1. Large City—total population of 200,000 or more and the center of a metropolitan area with contiguous satellite suburbs.

2. Medium Size City—total population of 30,000 to 199,999 and not contiguous to a large city.

3. Small City—total population of 7,500 to 29,999 with at least one major industry not directly related to agriculture.

4. Established Suburb—total population of 10,000 to 75,000 with population growth averaging not more than 3 percent a year during the past ten years and less than 10 percent of the land area undeveloped.

5. Developing Suburb—total population of 5,000 to 25,000 with an increase in population in excess of 100 percent during the past five years and less than 50 percent of the land area developed.

6. Agricultural Service Center—total population of 2,500 to 7,499 with more than 50 percent of the total public school enrollment drawn from area outside the boundaries of the municipality.

The utility of this taxonomy was tested using discriminant analysis and it was found that significant differences (other than gross size) existed between the various classes of school districts.[52]

Geiken[53] examined the influence of socioeconomic variables on two dependent variables (total expenditure and local expenditure for current operation per pupil in ADM) in 100 Wisconsin school districts during the 1959-60 and 1962-63 school years. Multiple regression techniques were employed and three variables (nonpublic enrollment ratio, full value total tax rate, and full value school tax rate) were expressed as dummy variables in certain equations. The ratio of nonpublic to public school enrollment and the full value school tax rate were found to be significant predictors of expenditures per pupil from local sources at both points in time. The statistical significance of nonpublic enrollment ratio shifted over time from higher to lower mutually exclusive classes in accounting for variance in local expenditure; the statistical significance of full value school tax rate shifted over time from lower to higher mutually exclusive classes in accounting for variance in both total and local expenditure per pupil. Using eight independent variables which reflected social, economic, and educational characteristics, Geiken was able to account for about 70 percent of the variation in total expenditure per pupil and about 83 percent of the variation in local expenditure per pupil which occurred during the 1959-60 school year. For the 1962-63 school year, the same eight variables were able to explain 93 percent of the variation in total expenditure per pupil and 96 percent of the variation in local expenditure per pupil.

Studies by Hickrod—Two studies which dealt with the extent of social and economic inequalities among suburban school districts have been published by Hickrod. In one study,[54] Hickrod examined the effect of ecological changes, i.e., changes in community characteristics, on expenditure for education. He studied seventy-five school districts found in the "Boston Standard Metropolitan Statistical Area plus adjacent area," as defined by the Bureau of Census. Changes in expenditures between 1949 and 1959 were studied using percentage change, i.e., the absolute change between 1949 and 1959 divided by the measurement taken in 1949 and multiplied by 100. Hickrod was able to explain only about 22 percent of the change in expenditure levels for the school districts which constituted his sample. Unexpectedly, the most potent predictor of change was the percentage change in the proportion of college graduates residing in the school district, overshadowing both median family income and property valuation per pupil.

In a later study,[55] Hickrod and Sabulao utilized a sample of school districts in five metropolitan areas (Boston, Chicago, Cleveland, Detroit, and St. Louis) to examine changes over time in social and economic variables with particular attention given to suburban school districts. They employed an *ad hoc* definition of suburbia defining suburban school districts as:

> All school districts in a given standard metropolitan statistical area which were tracted by the Bureau of the Census in its 1950 census of population *except* the central city school district in each of the 5 SMSA's studied.[56]

They commented that:

> When looked at from the perspective of the 1970 census the school districts in this study might well be thought of as "near" or "inner" suburban districts of the 5 metropolitan areas studied. Degrees of "suburbia" or where "suburbia" ends and "exurbia" begins is a matter of considerable controversy among urban researchers,[57]

Hickrod and Sabulao observed that converting the social and economic data available by census tracts to information for school districts was the most difficult and tedious part of the study. They employed the technique of overlaying census tract maps with school districts maps and using visual approximations in those instances where the census tract boundaries were not coterminous with a school district's boundaries. (Visual approximations of this type have been found to be quite reliable by other researchers;[58] and in states where reliable data regarding social and economic factors can be obtained from state or federal agencies, prorations based on population, school membership, and property valuations have been found to be quite accurate.)[59]

Hickrod and Sabulao employed measurements taken at two points in time, 1950 and 1960. Three measures of change were used--absolute change, percentage change, and positional change. It was found that in four of the five metropolitan areas studied, educational expenditures were more determined by the independent variables in 1960 than they were in 1950. Cross-sectional models explained expenditure levels rather well in the Boston and St. Louis areas, accounting for approximately 83 percent of the variance. In the Chicago area, however, the cross-sectional models accounted for only about 42 percent of the variance in expenditures. The predictive efficiency of the simultaneous change models was not as great as that of the cross-sectional models, although from one-half to two-thirds of the variation in expenditure changes was accounted by some of the models. The model which employed absolute change exhibited greater predictive power than either the percentage change or the positional change models.

In 1960, assessed valuation of property per pupil was the leading predictor of school expenditures in three of the metropolitan areas and the second best predictor in the other two areas. Occupational index emerged as the best predictor in two areas and the second best predictor in two other areas. School tax rate was found to be related positively to expenditures in three of the five areas in 1950 and in all five areas in 1960. Property valuation and occupational index also were found to be the most powerful predictors in the simultaneous change models. School tax rate was found to be a more powerful predictor in the change models than in the cross-sectional models, as was percentage of the population with college education.

Other Studies--In 1963, Sacks, Harris, and Carroll[60] published the results of a state-wide study utilizing data from fifty-eight counties in New York state. The county was used as the unit of analysis in this study and 90 percent of the variation in current expenditure per capita was explained. The most potent predictors were found to be per capita state aid, property valuation and per capita income.

Kee[61] examined differences in the social, economic and governmental characteristics of the central city and the area outside the central city in thirty-six selected standard metropolitan statistical areas. He also employed multiple regression analysis to examine the relationships between the level of per capita central city expenditures and selected variables. Of the six independent variables used in the regression analysis, per capita income was the most important determinant of the level of educational expenditure in the central city. The ratio of central city population to total SMSA population was the next most influential variable with regard to the level of educational spending. State aid for education was found to have a much smaller influence on educational spending than had been expected, but the number of students in average daily attendance per 1,000 population was found to be a significant predictor of both total and current educational expenditures.

Sacks and Ranney[62] concentrated on determinants of educational expenditure in suburban areas using data obtained from the *1962 Census of Governments* for the central city and area outside the central city in thirty-seven standard metropolitan statistical areas. After examining selected social, economic and fiscal characteristics of the area outside the central city, Sacks and Ranney commented:

> The generalizations often made about the nature of suburban education are not as useful as is often supposed. When analyzed in detail, communities which are called suburbs because of their physical location actually differ among themselves with respect to both their socioeconomic and fiscal characteristics. Of particular interest in the present context is the fact that the fiscal resources devoted to suburban schools vary from area to area considerably. For this reason, the determinants of this variation in suburban school support become of great interest.[63]

They found that 67 percent of the variation in expenditure per pupil among the suburban schools in their sample could be explained by three variables—income, enrollment ratio, and state aid. Income per capita and state aid per pupil were much more important predictors than was the proportion of the population attending public schools. In conclusion, the authors stated:

> It is evident from the results of this analysis that one can generalize about suburban school systems by comparing them with central cities. But it is just as clear that such a generalization does not get at the nature of suburban education. For it has been demonstrated here that differences among suburban areas with respect to income, the enrollment ratio, state aid, noneducational expenditures, and the fiscal variables are of the same order of magnitude as the differences between central city and suburb. Variations in school expenditures per student and school expenditures and taxes per capita among suburban areas indicate that it is not appropriate to describe a "typical" suburban school system. Suburban communities are not all of similar character.[64]

Fisher[65] utilized a sample of forty-two high school districts in the Chicago

Standard Metropolitan Statistical Area to study determinants of local educational expenditure. He was able to explain 67 percent of the variance in current expenditures. The variables he found to be the most useful predictors of current expenditures were (1) property valuation per pupil, (2) median family income and (3) federal and state aid per pupil. When the forty-two school districts were dichotomized according to income (high or low), in the twenty-one higher income school districts the percentage of adults with thirteen or more years of schooling, rather than property valuation per pupil, was found to be the most powerful predictor of current expenditure. When the forty-two districts were arrayed on a residential-industrial continuum, property valuation per pupil, median family income, and percentage of adults with thirteen or more years of schooling were found to be roughly equal in predictive power in the twenty-one districts classified as residental.

Kee[66] examined the change in expenditures which occurred between 1953 and 1962 in twenty-two large central city school districts. He was able to explain 41 percent in the change in expenditures between these two points in time. He found that the most effective predictor was change in median family income. Change in state aid per capita was found to be negatively related to change in expenditures, suggesting that a substitution of state resources for local resources had occurred during this period.

Using multiple regression analysis with five independent variables, Ranney[67] was able to explain approximately 75 percent of the variation in large city education expenditures in 1962. His sample consisted only of those standard metropolitan areas in which the central city population exceeded 300,000. The study was designed to ascertain the influence of other school districts in the metropolitan area on current educational expenditure per pupil in the central city. Ranney found that educational expenditures outside the central city, i.e., in the "suburban" areas, were very potent predictors of educational expenditure per pupil in the central city.

Hogan and Bentley[68] reported the results of an investigation in which they utilized a sample of fifty New York state school districts considered to be representative of the state's major school districts (exclusive of the six largest cities). Their multiple regression model utilized four independent variables—property tax base, local school tax rate, a size-location index, and professional staff-pupil ratio—with per pupil operating expenditure used as the dependent variable. The model was iterated using data for each of the years 1964 through 1968. The parameters of the regression equations were rather stable over the five year period, as was the amount of variance in expenditures accounted for by the four independent variables which, for the five years studied, was 86 percent, 82 percent, 84 percent, 86 percent, and 87 percent, respectively.

FOOTNOTES

1. See, for example, Otto Eckstein, PUBLIC FINANCE (2d ed.; Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1967), 58-62; John F. Due, GOVERNMENT FINANCE (3d ed.; Homewood, Ill.: Richard D. Irwin, Inc., 1963), 102-121; Harold M. Groves, FINANCING GOVERNMENT (4th ed.; New York: Henry Holt & Co., 1954), 11-24.

2. Eckstein, 59.

3. See, for example, Walter J. Blum and Harry Kalven, Jr., THE UNEASY CASE FOR PROGRESSIVE TAXATION (Chicago: University of Chicago Press, 1953).

4. Due, 120-121.

5. J. M. Buchanan, "Federalism and Fiscal Equity," READINGS IN THE ECONOMICS OF TAXATION, ed. Richard A. Musgrave and Carl S. Shoup (Homewood, Ill.: Richard D. Irwin, Inc., 1959), 93-109.

6. Ellwood P. Cubberley, SCHOOL FUNDS AND THEIR APPORTIONMENT (New York: Teachers College, Columbia University, 1906), 54.

7. George D. Strayer and Robert M. Haig, THE FINANCING OF EDUCATION IN THE STATE OF NEW YORK, A Report of the Educational Finance Inquiry Commission (New York: Macmillan Co., 1923), See especially 173-175.

8. See, for example, LeRoy J. Peterson, Richard A. Rossmiller, Stewart D. North and Howard E. Wakefield, ECONOMIC IMPACT OF STATE SUPPORT MODELS ON EDUCATIONAL FINANCE (Madison, Wis.: School of Education, University of Wisconsin, 1963) and Erick L. Lindman, STATE SCHOOL SUPPORT AND MUNICIPAL GOVERNMENT COSTS (Los Angeles, Cal.: University of California, Los Angeles, 1964).

9. See, for example Alan K. Campbell and Seymour Sacks, METROPOLITAN AMERICA: FISCAL PATTERNS AND GOVERNMENTAL SYSTEMS (New York: The Free Press, 1967) and Advisory Commission on Intergovernmental Relations, FISCAL BALANCE IN THE AMERICAN FEDERAL SYSTEM, Vol. II: METROPOLITAN FISCAL DISPARITIES (Washington, D.C.: GPO, 1967)).

10. John E. Coons, William H. Clune III and Stephen D. Sugarman, PRIVATE WEALTH AND PUBLIC EDUCATION (Cambridge, Mass.: Harvard University Press, 1970); Gail R. Wilensky, STATE AID AND EDUCATIONAL OPPORTUNITY (Beverly Hills, Cal.: Sage Publications, 1970); Steven J. Weiss, EXISTING DISPARITIES IN PUBLIC SCHOOL FINANCE AND PROPOSALS FOR REFORM (Research Report to the Federal Reserve

Bank of Boston, No. 46, February, 1970); and Arthur J. Wise, RICH SCHOOLS, POOR SCHOOLS: THE PROMISE OF EQUAL EDUCATIONAL OPPORTUNITY (Chicago: University of Chicago Press, 1968).

11. LeRoy J. Peterson, Richard A. Rossmiller and Marlin M. Volz, THE LAW AND PUBLIC SCHOOL OPERATION (New York: Harper & Row, 1969), 102-124.

12. Advisory Commission on Intergovernmental Relations, MEASURES OF STATE AND LOCAL FISCAL CAPACITY AND TAX EFFORT (Washington, D.C.: GPO, 1962), 3.

13. *Ibid.*

14. *Ibid.*

15. R. L. Johns, "Local Ability and Effort to Support Schools," PROBLEMS AND ISSUES IN SCHOOL FINANCE, ed. R. L. Johns and E. L. Morphet (New York: Bureau of Publications, Teachers College, Columbia University, 1952), 221.

16. Council of State Governments, THE FORTY-EIGHT STATE SCHOOL SYSTEMS (Chicago: The Council, 1949).

17. U. S. Office of Education, PUBLIC SCHOOL FINANCE PROGRAMS OF THE FORTY-EIGHT STATES, Circular No. 274 (Washington, D.C.: GPO, 1950) and Forrest W. Harrison and Eugene P. McLoone, PROFILES IN SCHOOL SUPPORT: A DECENNIAL OVERVIEW, OE Miscellaneous Publication No. 57 (Washington, D.C.: GPO, 1965).

18. National Education Association, FINANCIAL STATUS OF THE PUBLIC SCHOOLS, 1969 (Washington, D.C.: The Association, 1969).

19. Leslie L. Chism, THE ECONOMIC ABILITY OF THE STATES TO FINANCE PUBLIC SCHOOLS, Contributions to Education No. 669 (New York: Bureau of Publications, Teachers College, Columbia University, 1936).

20. Paul R. Mort, et al, FEDERAL SUPPORT FOR PUBLIC EDUCATION (New York: Bureau of Publications, Teachers College, Columbia University, 1936).

21. Advisory Commission on Intergovernmental Relations, FISCAL CAPACITY... 13-52.

22. *Ibid.*, 89.

23. James W. Martin, REVENUE POTENTIALS OF THE STATES (Washington, D.C.: National Education Association, 1964).

24. G. Alan Hickrod and Cesar M. Sabulao, INCREASING SOCIAL AND ECONOMIC INEQUALITIES AMONG SUBURBAN SCHOOLS (Danville, Ill.: Interstate Printers and Publishers, 1969), 39.

25. Peterson, et. al., ECONOMIC IMPACT. . ., 106-110.

26. Frank Farner and John Edmundson, RELATIONSHIP OF PRINCIPAL TAX BASES FOR PUBLIC SCHOOL SUPPORT IN THE COUNTIES OF THE ELEVEN WESTERN STATES (Eugene, Ore.: Bureau of Educational Research and Service, University of Oregon, 1969).

27. Hickrod and Sabulao, 39.

28. Francis G. Cornell, MEASURE OF TAXPAYING ABILITY OF LOCAL SCHOOL ADMINISTRATIVE UNITS, Contributions to Education No. 608 (New York: Bureau of Publication, Teachers College, Columbia University, 1936).

29. R. L. Johns, "Local Ability. . .", 231.

30. See, for example, Clayton D. Hutchins and Delores A. Steinhilber, TRENDS IN FINANCING PUBLIC EDUCATION: 1929-30 TO 1959-60, OE Circular No. 666 (Washington, D.C.: GPO, 1961) and Forrest W. Harrison and Eugene P. McLoone, PROFILES IN SCHOOL SUPPORT, OE Miscellany No. 47 (Washington, D.C.: GPO, 1965).

31. See, for example, such annual publications of the National Education Association as FINANCIAL STATUS OF THE PUBLIC SCHOOLS, RANKINGS OF THE STATES, AND ESTIMATES OF SCHOOL STATISTICS.

32. Orlando F. Furno and James E. Doherty, "Cost of Education Index 1969-70," SCHOOL MANAGEMENT 14 (Jan., 1970), 35ff.

33. Harvey E. Brazer, CITY EXPENDITURES IN THE UNITED STATES, Occasional Paper 66 (New York: National Bureau of Economic Research, 1959).

34. George F. Break, INTERGOVERNMENTAL FISCAL RELATIONS IN THE UNITED STATES (Washington, D.C.: The Brookings Institution, 1967), 172.

35. John C. Bollens (ed.), EXPLORING THE METROPOLITAN COMMUNITY (Berkeley, Cal.: University of California Press, 1961); Seymour Sacks and

W. F. Hellmuth, FINANCING GOVERNMENT IN A METROPOLITAN AREA (Glencoe, Ill.: The Free Press, 1961); and Robert C. Wood, 1400 GOVERNMENTS (Cambridge, Mass.: Harvard University Press, 1961).

36. Henry J. Schmandt and G. Ross Stephens, "Local Government Expenditure Patterns in the United States," LAND ECONOMICS, XXXIX (Nov., 1963), 397-406.

37. Remi Boelaert, "Politician Fragmentation and Inequality of Fiscal Capacity in the Milwaukee SMSA," NATIONAL TAX JOURNAL, 23 (March, 1970), 83-88.

38. Advisory Commission on Intergovernmental Relations, METROPOLITAN SOCIAL AND ECONOMIC DISPARITIES: IMPLICATIONS FOR INTER-GOVERNMENTAL RELATIONS IN CENTRAL CITIES AND SUBURBS. (Washington, D.C.: GPO, 1965).

39. *Ibid.*, 32.

40. Werner Z. Hirsch, "Determinants of Public Education Expenditures," NATIONAL TAX JOURNAL, 13 (March, 1960), 29-40.

41. Sacks and Hellmuth, FINANCING GOVERNMENT. . .

42. H. Thomas James, SCHOOL REVENUE SYSTEMS IN FIVE STATES (Stanford, Cal.: School of Education, Stanford University, 1961).

43. H. Thomas James, J. Alan Thomas and Harold J. Dyck, WEALTH, EXPENDITURE AND DECISION MAKING FOR EDUCATION (Stanford, Cal.: School of Education, Stanford University, 1963).

44. H. Thomas James, James A. Kelly and Walter I. Garms, DETERMINANTS OF EDUCATION EXPENDITURES IN LARGE CITIES OF THE UNITED STATES (Stanford, Cal.: School of Education, Stanford University, 1966). See also Walter I. Garms, "The Financial Characteristics and Problems of Large City School Districts," EDUCATIONAL ADMINISTRATION QUARTERLY, 3 (Winter, 1967), 14-27.

45. James, Kelly and Garms, DETERMINANTS. . ., 97-100.

46. Jesse Burkhead, STATE AND LOCAL TAXES FOR PUBLIC EDUCATION (Syracuse, N.Y.: Syracuse University Press, 1963).

47. Warner Bloomberg, Jr. and Morris Sunshine, SUBURBAN POWER STRUCTURES AND PUBLIC EDUCATION (Syracuse, N.Y.: Syracuse University Press, 1963).

48. Jerry Miner, SOCIAL AND ECONOMIC FACTORS IN SPENDING FOR PUBLIC EDUCATION (Syracuse, N.Y.: Syracuse University Press, 1963).

49. *Ibid.*, 37-65.

50. *Ibid.*, Peterson, Rossmiller, North and Wakefield, ECONOMIC IMPACT...

52. *Ibid.*, 182-188.

53. Lloyd A. Geiken, "An Analysis of Selected Socio-Economic Factors Which Influence Expenditures for Education in 100 Wisconsin School Districts" (unpublished Ph.D. dissertation, University of Wisconsin, 1965).

54. G. Alan Hickrod, "Ecological Changes within A School District and Expenditure for Education," AMERICAN EDUCATIONAL RESEARCH JOURNAL, 4 (May, 1967), 241-252.

55. Hickrod and Sabulao, INCREASING SOCIAL...

56. *Ibid.*, 9.

57. *Ibid.*

58. See, for example, Frank Farner, ECONOMIC, SOCIOLOGICAL AND DEMOGRAPHIC CHARACTERISTICS OF OREGON SCHOOL DISTRICTS AND THEIR RELATIONSHIP TO DISTRICT FINANCIAL PRACTICES (Eugene, Ore.: Bureau of Educational Research, University of Oregon, 1966) and James, Kelly and Garms, DETERMINANTS...

59. Peterson, Rossmiller, North and Wakefield, ECONOMIC IMPACT... and Geiken, "An Analysis..."

60. Seymour Sacks, Robert Harris and John J. Carrol, STATE AID AND LOCAL GOVERNMENT: THE ROLE OF STATE AID IN NEW YORK (Albany, N.Y.: New York Department of Audit and Control, 1963).

61. Woo Sik Kee, "Central City Expenditures and Metropolitan Areas," NATIONAL TAX JOURNAL, 18 (Dec., 1965), 337-353.

62. Seymour Sacks and David C. Ranney, "Suburban Education: A Fiscal Analysis," EDUCATING AN URBAN POPULATION, ed., Marilyn Gittell (Beverly Hills, Cal.: Sage Publication, Inc., 1967), 60-76.

63. *Ibid.*, 69.

64. *Ibid.*, 75-76.

65. Dale Fisher, "Local Determinants of Per Pupil Expenditures in Suburban High School Districts" (unpublished Ph.D. dissertation, University of Chicago, 1967).

66. Woo Sik Kee, "Suburban Population Growth and Its Implications for Core City Finance," LAND ECONOMICS (May, 1967), 202-211.

67. David C. Ranney, "The Impact of Metropolitanism on Central City Education," EDUCATIONAL ADMINISTRATION QUARTERLY, 5 (Winter, 1969), 24-36.

68. Lloyd L. Hogan and Fred H. Bentley, "The Determinants of Educational Expenditures in New York State," FISCAL PLANNING FOR SCHOOLS IN TRANSITION, Proceedings of the 12th National Conference in School Finance (Washington, D.C.: National Education Association, 1970), 188-196.

CHAPTER II

DESIGN AND PROCEDURES OF THE STUDY

The design of a study is of singular importance, for it circumscribes the use which may be made of the findings of the study. The design phase of this study was particularly crucial, since it was the intent of the researchers to design the study in such a way as to permit generalizing from the findings with regard to the revenue patterns, expenditure patterns, and fiscal capacity of various types of school districts and the municipalities with which they are associated in the United States. Specific knowledge of the nature of fiscal capacity of school districts of various types is essential if school finance models which provide for equity in the treatment of taxpayers are to be devised.

In this chapter will be presented the procedures which were followed in obtaining the sample of school districts utilized in this study, the data which were obtained regarding each school district, and the methods and sources which were utilized to obtain the data. The rationale which guided the analysis of the data and various statistical analyses which were performed in an attempt to identify similarities and differences among the various types of districts also will be treated.

Selection of The Sample

It was desired that the sample of school districts be broadly representative of all states and that, within each state included in the sample, the school districts selected for the sample be broadly representative of school districts within the state. This required that a two-stage sampling procedure be employed. The first stage involved selection of a sample of states; the second involved selection of a sample of school districts from among all school districts in the sample of states.

The Sample of States

Ideally, the sample would have included all fifty states. Within the constraints imposed by the time and resources available, however, it was necessary to concentrate on a sample consisting of approximately eight states. The project proposal specified that the sample would be selected to "obtain wide geographic dispersion" and, to the greatest extent possible, include at least one state in each quintile (by rank) on distributions based on per capita income, income per person age 5-17, net effective buying income per household, state-local tax collection as percentage of personal income, population per square mile, number of operating school administrative units, total population and percent of population urban.

Accordingly, the first step in arriving at a sample of states was to obtain data with regard to these and other relevant variables. Preliminary screening yielded a total of eighteen states that gave wide geographic dispersion and from which a sample of eight states that met the other criteria might be drawn. Selected characteristics of these eighteen states are displayed in Table 2.1. After considering several possible combinations, a sample consisting of the following states was decided upon: Florida, Kentucky, New York, North Dakota, Oregon,

TABLE 2.1

DATA EMPLOYED IN SELECTING THE SAMPLE OF STATES
(RANK SHOWN IN PARENTHESES)

STATE	Per Capita Personal Income, 1967a	Personal Income Per Person Age 5-17 1967a	Net Effective Buying Income Per House-hold, 1967a	State-Local Tax Collection as Per Cent of Personal Income, 1967a	Population Per Square Mile, 1967b	No. of Operating Administrative Units, 1967-68b	Total Population 1967b (in Millions)	Per Cent of Population Urban, 12-31-67a	With 250,000 or More in 1960c	Substantial Rural Area?	State Income Tax in 1967?d	Geographic Region
New Hampshire	(25) 3,053	(16) 11,898	(21) 8,840	(45) 8.4	(24) 76	(19) 169	(43) .685	(34) 57.5	None	Yes	Yes	East
New York	(2) 3,759	(1) 15,861	(9) 9,941	(2) 12.2	(5) 382	(43) 761	(2) 18.335	(4) 83.3	New York City	Yes	Yes	East
Maryland	(11) 3,421	(12) 12,712	(6) 10,369	(29) 9.5	(6) 373	(3) 24	(18) 3.685	(17) 71.5	Baltimore	No	Yes	East Central
Virginia	(30) 2,804	(29) 10,715	(23) 8,676	(44) 8.5	(15) 114	(15) 132	(14) 4.533	(31) 58.1	Norfolk	Yes	Yes	East Central
Alabama	(48) 2,163	(48) 7,967	(48) 7,011	(34) 8.9	(26) 69	(14) 118	(21) 3.540	(33) 57.9	Birming-ham	Yes	Yes	South East
Florida	(28) 2,853	(25) 11,446	(44) 7,465	(26) 9.6	(16) 111	(10) 67	(9) 5.996	(12) 74.0	Miami	Yes	No	South East
Michigan	(12) 3,396	(14) 12,096	(7) 10,338	(29) 9.5	(11) 151	(42) 708	(7) 8.584	(13) 73.3	Detroit	Yes	Yes	North Central
Wisconsin	(18) 3,156	(24) 11,496	(19) 9,016	(8) 11.2	(22) 77	(36) 487	(16) 4.188	(27) 61.2	Milwaukee	Yes	Yes	North Central
Kentucky	(44) 2,426	(39) 9,156	(42) 7,529	(37) 8.8	(21) 80	(24) 199	(22) 3.191	(41) 46.4	Louisville	Yes	Yes	Central
Missouri	(27) 2,993	(20) 11,723	(28) 8,307	(42) 8.7	(27) 67	(40) 675	(13) 4.605	(20) 69.0	St. Louis	Yes	Yes	Central

TABLE 2.1 (CONT.)

STATE	Per Capita Personal Income, 1967a	Personal Income Per Person Age 5-17 1967a	Net Effective Buying Income Per Household, 1967a	State-Local Tax Collection as Per Cent of Personal Income, 1967b	Population Per Square Mile, 1967b	No. of Operating Administrative Units, 1967-68b	Total Population 1967b (in Millions)	Per Cent of Population Urban, 12-31-67a	With 250,000 Or More in 1960c	Substantial Rural Area?	State Income Tax in 1967d	Geographic Region
North Dakota	(4) 2,487	(43) 8,636	(29) 8,218	(15) 10.7	(43) 9	(34) 438	(45) .639	(50) 38.9	None	Yes	Yes	Plains
South Dakota	(37) 2,590	(38) 9,282	(39) 7,716	(43) 11.1	(47) 9	(44) 1,208	(45) .674	(45) 40.8	None	Yes	No	Plains
New Mexico	(41) 2,477	(47) 8,039	(38) 7,718	(9) 11.1	(45) 8	(11) 90	(37) 1,003	(19) 69.6	None	Yes	Yes	South West
Texas	(32) 2,744	(31) 10,377	(33) 7,975	(47) 8.3	(33) 41	(48) 1,260	(5) 10,873	(8) 77.4	Houston	Yes	No	South West
Colorado	(19) 3,135	(26) 11,444	(25) 8,532	(9) 11.1	(39) 19	(22) 181	(31) 1,975	(11) 75.3	Denver	Yes	Yes	Mountain
Utah	(36) 2,504	(44) 8,521	(27) 8,353	(12) 11.0	(42) 12	(5) 40	(36) 1,022	(10) 76.6	None	Yes	Yes	Mountain
Oregon	(23) 3,063	(17) 11,887	(30) 8,113	(21) 10.3	(38) 21	(31) 371	(30) 1,999	(23) 65.4	Portland	Yes	Yes	Pacific
Hawaii	(13) 3,331	(20) 11,723	(2) 11,215	(1) 12.4	(14) 115	(1) 1	(40) .741	(7) 77.9	Honolulu	No	Yes	Out-lying

[a]Research Division, National Education Association, RANKINGS OF THE STATES, 1969. Washington, D.C.: NEA, 1969.

[b]Research Division, National Education Association, RANKINGS OF THE STATES, 1968, Washington, D.C., NEA, 1968.

[c]Research Division, National Education Association, STATE TAXES IN 1967. Washington, D.C.: NEA, 1969.

[d]THE TIMES ATLAS OF THE WORLD. Edinburgh, Scotland: John Bartholomew & Son, Ltd., 1967.

Texas, Utah and Wisconsin. The distribution of states by quintile rank on selected variables is shown in Table 2.2. As may be seen, only on one variable (percentage of population urban) was the objective of having at least one state in each quintile on a ranking distribution not met. Not only is each of the quintiles represented on all other variables, but in most cases the rankings are quite evenly distributed over the entire range.

The Sample of School Districts

The first step in selecting the sample was the development of a rationale for classifying school districts. Only school districts providing either K-12 or 1-12 educational programs and which enrolled 1,500 or more pupils during the 1967-68 school year were eligible for inclusion in the sample. Districts operating only elementary or secondary schools were eliminated because: (1) it is virtually impossible to compare data obtained from such districts with data obtained from districts which operate both elementary and secondary schools, and (2) separate elementary and secondary school districts were considered to be outmoded and inappropriate organizations for providing educational services. Districts enrolling less than 1,500 pupils were excluded because: (1) data pertaining to expenditures for municipal services in such districts are difficult, if not impossible to obtain; (2) operating units of fewer than 1,500 pupils in grades K-12 or 1-12 are generally inefficient, at least in terms of economies of scale, and can provide an educational program of breadth and depth only at a considerably higher cost per pupil than larger districts; and (3) where geographic and/or demographic conditions necessitate that school districts enrolling less than 1,500 pupils be operated, the characteristics of such districts are likely to be similar to those of somewhat larger districts which serve rural, predominantly agricultural areas.

Previous research by Brazer[1] (in which he developed a seven-category taxonomy of cities based on an analysis of 462 cities, villages, and other incorporated places having populations in excess of 25,000 in 1950) and by Peterson and his associates[2] (in which a six-category taxonomy of school districts was developed based on extensive analysis of 104 Wisconsin school districts) provided a point of departure for this study. It was important that the sample of school districts selected for this study include representatives of those categories of districts which the results of previous research suggested would be likely to differ significantly in their revenue and expenditure patterns, and in their fiscal capacity. It also was imperative that data be obtainable for all districts included in the sample—not only for the school districts but also for the municipalities located in the area served by the school district. Thus, some preliminary investigation was undertaken concerning the data which might be available regarding school districts and municipalities in the eight sample states.

A taxonomy of school districts was developed based primarily on the knowledge and insights gained from previous research but tempered by knowledge of the extent to which data, particularly with regard to local non-school expenditures, could be obtained. The taxonomy, which consisted of seven mutually exclusive categories of school districts defined according to the type of area served by the school district, is as follows:

TABLE 2.2

DISTRIBUTION BY QUINTILE RANK ON SELECTED VARIABLE OF THE EIGHT STATES INCLUDED IN THE SAMPLE

Quintile Rank	Per Capita Personal Income, 1967	Personal Income Per Person Age 5-17, 1967	Net Effective Buying Income Per Household, 1967	State-Local Tax Collection as Per Cent of Personal Income, 1967	Population Per Square Mile, 1967	No. of Operating Administrative Units, 1967-68	Total Population, 1967 (in Millions)	Per Cent of Population Urban, 12-31-67	City with 250,000 or More in 1960	Geographic Region
1-10	N.Y. (2)	N.Y. (1)	N.Y. (9)	N.Y. (2) Wis. (8)	N.Y. (5)	Fla. (10) Utah (5)	N.Y. (2) Fla. (9) Tex. (8)	N.Y. (4) Utah (10)	N.Y. Fla. Wis. Ky. Tex. Ore.	East South East North Central Central Plains Southwest Mountain Pacific
11-20	Wis. (18)	Ore. (17)	Wis. (19) Utah (27)	N.D. (15) Utah (12) Ore. (21)	Fla. (16)	Ky. (24)	Wis. (16)	Fla. (12)		
21-30	Fla. (28) Ore. (23)	Fla. (25) Wis. (24)	N.D. (29) Ore. (30)	Fla. (26)	Wis. (22) Ky. (21)	Wis. (36) Ore. (31)	Ky. (22) Ore. (30)	Wis. (27) Ore. (23)		
31-40	N.D. (40) Tex. (32) Utah (36)	Ky. (39) Tex. (31)	Tex. (33)	Ky. (37)	Tex. (33) Ore. (38)	N.D. (34)	Utah (36)			
41-50	Ky. (44)	N.D. (43) Utah (44)	Fla. (44) Ky. (42)	Tex. (47)	N.D. (43) Utah (42)	N.Y. (43) Tex. (48)	N.D. (45)	Ky. (41) N.D. (50)		

A. **Major urban core city**—school district serving a city located in a standard metropolitan statistical area (SMSA), named in the title of the SMSA, and having a population of 250,000 or more persons in 1960.
B. **Minor urban core city**—school district serving a city located in a SMSA, named in the title of the SMSA, and having a population of less than 250,000 persons in 1960.
C. **Independent city**—school district serving a city not located in a SMSA and having a population of 25,000 or more persons in 1960.
D. **Established suburb**—school district serving a city or village located in a SMSA, which is not one of the core cities, and which has experienced a school enrollment increase averaging less than 5 percent annually over the most recent five to seven year period for which data are available.
E. **Developing suburb**—school district serving a city or village located in a SMSA, which is not one of the core cities, and which has experienced a school enrollment increase of at least 5 percent annually over the most recent five to seven year period for which data are available.
F. **Small City**—school district serving a city, village, or other incorporated municipality not located in a SMSA and having a population of 10,000-24,999 persons in 1960.
G. **Small town or agricultural service center**—school district serving an area not located in a SMSA in which the largest populated place had a population of less than 10,000 persons in 1960.

A listing of all school districts in each of the eight sample states, the membership or enrollment in each district for the 1967-68 school year, and the grade span served by the district was obtained from the *Education Directory*[3] published annually by the U.S. Office of Education. Only those districts offering a K-12 or 1-12 educational program and having at least 1,500 pupils enrolled during the 1967-68 school year were eligible for inclusion in the sample. To identify school districts which were located within a SMSA, a listing of standard metropolitan statistical areas identified by the Bureau of Census was consulted.[4] To determine whether a school district should be categorized as an established suburb or a developing suburb, the *Education Directory*5 for 1962-63 was obtained and the percentage of enrollment increase between the 1962-63 and 1967-68 school years in each suburban district was computed. In the event of missing data, correspondence with state education department officials and/or state education department publications was utilized to secure the necessary data. In states where local school districts are organized on a county unit basis, the population of the largest city in the school district was used to determine the appropriate school district category. An attempt was made to exclude from the sample any school districts which were created between 1962-63 and 1967-68, since data for the 1962-63 school year would not readily be available for such districts. Each school district in the eight sample states which met the criteria for inclusion in the sample was identified and placed in one of the seven school district categories.

A random sample drawn proportionately by states was employed to assure that appropriate geographic representation was retained in each category. The

complete list of school districts included in the sample by category and by state is shown in Appendix A.

A proportional random sample of thirty-five school districts was drawn independently for each of the seven categories with the exception of Category A, where the total sample of thirteen school districts constituted the sample for the category. The categorization of school districts in each state produced the distribution shown in Table 2.3, which also shows the distribution of the sample by states and by categories.

TABLE 2.3

CATEGORIZATION OF SCHOOL DISTRICTS IN THE EIGHT SAMPLE STATES AND DISTRIBUTION OF THE SAMPLE OF SCHOOL DISTRICTS BY STATE AND BY CATEGORY

	Category							
State	A	B	C	D	E	F	G	Total
Florida*	2/2	4/7	6/7	0/0	0/0	3/8	3/32	18/56
Kentucky*	1/1	2/4	4/4	0/4	0/1	3/7	6/61	16/82
New York	3/3	6/9	8/9	20/139	20/95	7/18	10/100	74/373
North Dakota	0/0	1/1	3/3	0/0	0/1	1/3	1/5	6/13
Oregon	1/1	1/2	0/0	2/11	1/4	3/8	3/28	11/54
Texas	5/5	16/26	5/6	9/63	10/44	13/34	7/70	65/248
Utah*	0/0	2/3	0/0	0/3	1/4	1/2	1/14	5/26
Wisconsin	1/1	3/5	9/10	4/17	3/13	4/12	4/38	28/96
No. in sample	13	35	35	35	35	35	35	223
Total	13	57	39	237	162	92	348	948

*County unit districts categorized on the basis of the population of the largest city in the school district.

After data had been obtained from each district, it was discovered that one Texas school district in Category E (Fort Sam Houston) was atypical in that virtually all revenue reported was from federal sources, and no market value of property was available. Consequently, this district was dropped from the sample, leaving a total of thirty-four districts in Category E.

Data Sources and Data Collection

Any researcher who attempts to collect and integrate data regarding the fiscal capacity of school districts and the municipalities with which they are associated is confronted with a multitude of vexing problems. Perhaps the most difficult problem with which one must deal is the fact that, in most states, school districts and municipalities are not conterminous. Indeed, in many states the

territory occupied by a single school district may be located in several municipalities.

A second serious problem is the lack of a uniform accounting system which is followed by all municipalities. In some states there is no state agency which systematically gathers data with respect to municipal revenues and expenditures. Even where such data are collected, the lack of a uniform municipal accounting system makes it exceedingly difficult to obtain data which are reasonably comparable from state to state.

A third difficult problem is the variance in property assessment procedures within and among states. Assessment practices often vary from one jurisdiction to another within a state. Although many states provide for the determination by a state agency of the equalized or market value of the property within each taxing jurisdiction, the accuracy of these data vary, depending upon the assessment practices and procedures which are employed as well as upon the policy of the state in regard to property which is exempt from taxation. Thus, the value of taxable property reported for a school district or municipality will vary from state to state.

Yet another problem is the variability of school district accounting practices from state to state. The state department of education in each state systematically collects data regarding the revenues and expenditures of all local school districts, and all states require that such data be reported in the general format recommended in the Handbook II.[6] However, some variation in accounting format and procedures does occur from state to state, largely as a result of variation in state support programs. Variations in the practices and procedures employed in school lunch program accounting, for example, make it extremely difficult to obtain comparable revenue and expenditure data for this program.

Another problem worth noting is that of obtaining data with regard to personal income and retail sales on a school district basis. Even in states which levy an income tax, rarely, if ever, are data on income attributable to the school district in which a taxpayer resides. Thus, a number of simplifying assumptions are required if one is to approximate income and sales data for school districts.

While the above listing of problems is by no means exhaustive, it does serve to illustrate the problems which confront a researcher who attempts to study the revenue patterns, expenditure patterns, and fiscal capacity of school districts and municipalities.

It was found that the only reasonably comparable data concerning the revenue and expenditures of municipalities and counties were the data reported in the *Census of Governments*. The Bureau of the Census conducts a Census of Governments at five-year intervals with the most recent one conducted in 1967. Since published data for municipalities and counties for 1962 and 1967 are available from the *Census of Governments,* and the study design called for collecting similar data at two points in time, it was readily apparent that data for the sample of school districts should be collected for the 1961-62 and 1966-67 school years.

Data for Counties and Municipalities

Thirty items of data regarding revenues and expenditures were obtained from

the 1962 and 1967 Census of Governments[7] for the largest municipality (city, village or township) with which each school district in the sample was associated, and for each county in which a school district included in the sample was located. The following items of data were obtained:

1. Revenue from state government
2. Revenue from all other intergovernmental sources
3. Revenue from property taxes
4. Revenue from other local taxes
5. Revenue from other local sources (charges and misc.)
6. Revenue from utilities
7. Total general expenditures
8. General expenditures other than capital outlay
9. Total expenditure for education
10. Expenditure for education other than capital outlay
11. Expenditure for highways other than capital outlay
12. Expenditure for public welfare
13. Expenditure for hospitals other than capital outlay
14. Expenditure for health
15. Expenditure for police protection
16. Expenditure for fire protection
17. Expenditure for sewerage other than capital outlay
18. Expenditure for sanitation other than sewerage
19. Expenditure for parks and recreation
20. Expenditure for housing and urban renewal
21. Expenditure for libraries
22. Expenditure for financial administration
23. Expenditure for general control
24. Expenditure for general public buildings
25. Other and unallocable expenditure other than capital outlay
26. Expenditure for interest on public debt
27. Expenditure for utilities other than capital outlay
28. Expenditure for capital outlay
29. Expenditure for retirement
30. Total outstanding debt

In the case of county data, Item 15 was "expenditure for police protection and corrections" and Item 19 was "expenditure for parks, recreation and natural resources."

Four items of data were obtained from *Sales Management*[8] for each municipality and county for 1962 and 1967. These four items of data were:

1. Estimated population
2. Estimated number of households
3. Estimated buying income per household
4. Estimated retail sales

Acquisition of Municipal and County Data

Data were taken directly from the *Census of Governments* and from Sales Management wherever possible. In situations in which the largest incorporated municipality in a school district was less than 10,000 population, total

expenditure by incorporated places of the same size in the state (i.e., less than 2,500, 2,500–4,999 and 5,000–9,999) for each function was divided by the number of municipalities in that size category and the result then divided by the 1960 population of the municipality in question to approximate the expenditure by the municipality for each function. In the case of certain New York school districts where no incorporated city or village could be identified as being associated with the school district, data for the township with which the school district was associated were used. In cases where data for a county or municipality were not reported in the *Census of Governments*, average expenditures by similar sized counties or municipalities in the state were obtained and substituted for the missing data.

Similar procedures were employed in developing estimates of population, households, etc., when *Sales Management* did not provide data for a municipality included in the sample. In all such cases, the percentage of school enrollment in a given county accounted for by the school district associated with the municipality in question was computed and used as the basis for pro-rating *Sales Management's* estimates for the county to the municipality in question.

The procedures employed to approximate missing data undoubtedly yielded revenue and expenditure figures somewhat different from those which actually were made by the counties and municipalities in question. This did not compromise the objectives of the study, however, since the purpose of the study was to examine similarities and differences among various categories of school districts and the municipalities with which these districts were associated, and in all cases the procedures employed to provided missing data utilized data for similar counties and municipalities.

Data for School Districts

Twenty-three items of data were collected for each school district in the sample for the 1961–62 and the 1966–67 school years. (An attempt was made to obtain an additional item, the area of each district in square miles, but it was found that this information was not available in some of the sample states.) The twenty-three items of data which were obtained for each district were:

1. Revenue from state sources
2. Revenue from federal sources
3. Revenue from other governmental agencies (e.g., aid from counties and tuition from other school districts)
4. Revenue from local property tax
5. Revenue from other local taxes
6. Revenue from all other local sources (user fees, sales, rentals, etc.)
7. Expenditure for transportation
8. Expenditure for capital outlay (purchase of sites, new construction, and major remodeling)
9. Expenditure for debt service (excluding repayment of short term loans)
10. Expenditure for community services
11. Expenditure for administration
12. Expenditure for instruction
13. Expenditure for attendance services
14. Expenditure for health services

15. Expenditure for fixed charges (primarily insurance and rentals)
16. Expenditure for operation of plant
17. Expenditure for maintenance of plant
18. Expenditure for food services
19. Expenditure for all other purposes
20. Number of full time equivalent professional employees
21. Number of pupils in average daily membership
22. Total long-term debt (at close of school year)
23. Market value of property in the school district

It was necessary to discard Item 18, expenditure for food services, because of the variation in accounting and reporting procedures which was found within and among the states, as well as the obvious differences among the districts in their philosophy concerning the financing of the school food service program. For example, where the school food service program is handled through a clearing account and only the balance or deficit is reported, it is not possible to ascertain the extent of gain or loss during a given year without additional accounting data. On the other hand, if a clearing account is not used, it often is not possible to determine receipts which should be allocated to the program to arrive at the net expenditure unless one has access to the accounting records of the district. Thus, within the constraints imposed by time and resources available, it was impossible to obtain from the sample districts reasonably comparable data regarding expenditures for school food services.

It also was necessary to combine Item 16 (expenditure for operation of plant) with Item 17 (expenditure for maintenance of plant). The official financial report filed by school districts in New York for the 1966-67 school year did not provide a breakdown of these two categories. Consequently, the two categories were combined for all school districts in the study.

It was found that funds made available to local school districts in 1966-67 from the various titles of P.L. 89-10 (Elementary and Secondary Education Act) generally were accounted for and reported separately. For the purpose of this study, however, all expenditures from these funds were allocated to the appropriate expenditure category, i.e., instruction, administration, health services, etc., whenever possible.

Insofar as they could be identified, all school district revenues which originated at the federal level were classified as federal funds regardless of whether they "flowed through" a state agency or were paid directly to the school district. In a number of states, federal "flow through" funds were reported as state aid. Where this practice was followed, such federal funds were identified and reported as revenue from federal sources rather than as revenue from state sources.

Acquisition of School District Data

All school district data were obtained from official school district reports on file in the respective state departments of education and/or from reports and publications of the respective state departments of education. In all states except North Dakota either the project director or the assistant director visited the state department of education, identified with the assistance of the state department's staff the most accessible sources of the data being sought, obtained from official

school district reports all items of data which were not available in publications of the department of education, obtained copies of all pertinent publications, and secured the advice and counsel of state department of education personnel regarding the procedures and sources which might be employed in securing any missing data. In the case of North Dakota, Professor John A. Thompson, Director of Graduate Studies in the School of Education at the University of North Dakota, secured the data for the North Dakota school districts included in the sample. The specific data sources and procedures employed to obtain data in each of the states are identified below.

Florida.—Data with regard to revenues, expenditures, professional staff, average daily membership, and outstanding indebtedness were obtained from the Biennial Report, Superintendent of Public Instruction, State of Florida (Fiscal Years Beginning July 1, 1960 and Ending June 30, 1962), and from the Biennial Report, Commissioner of Education, State of Florida, (Fiscal Years Beginning July 1, 1966 and Ending June 30, 1968). The market value of property in the Florida school districts was computed by applying the ratio of assessed to full value of property reported in the state comptroller's reports for the fiscal years 1960 and 1966 to the total value of non-exempt property in the county school district as compiled and reported by the state comptroller.

Kentucky.—All data for the 1961-62 school year were obtained from official school district reports and unpublished compilations on file in the State Department of Education. For the 1966-67 school year these same sources were utilized to obtain data with regard to professional staff, number of pupils, and total long term debt. Data concerning receipts and expenditures were obtained from a publication of the Kentucky Department of Education—Local District Annual Financial Reports, 1966-67. In the case of Kentucky, it was not possible to allocate ESEA expenditures to functional categories since only a lump sum expenditure was reported. Consequently, this sum was recorded under "all other expenditures."

New York.—Basic data with regard to receipts, expenditures, market value of property, number of pupils, and long term debt of New York school districts included in the sample were obtained from two reports published by the State Education Department—Annual Education Summary, 1961-62 and Annual Education Summary, 1966-67. It was necessary to supplement the data available from these two reports by referring directly to official school district financial reports in order to allocate ESEA expenditures to functional categories and to determine expenditures for fixed charges, health services, and attendance services. Since only data with regard to average daily attendance in each district was available, it was necessary to convert these figures to average daily membership. This was accomplished by multiplying the reported average daily attendance for each district by 108.57, since average daily attendance in New York state was reported to be 92.1 percent of average daily membership in 1966-67.[9] The number of professional personnel employed in each district was obtained from the State Education Department's publication *Survey of Enrollment, Staff and Schoolhousing* for Fall, 1961 and Fall, 1966.

North Dakota.—All data for North Dakota school districts were obtained from official school district reports and records on file in the North Dakota

Department of Public Instruction. To arrive at an estimate of the market value of property, the official assessed value reported for each school district was multipled for a factor of eight, since property is assessed at 25 percent of true value in North Dakota and schools can levy a tax on only 50 percent of the assessed value. While this procedure failed to reflect variations in local assessing practices, it was deemed adequate to provide a reasonable approximation of the true market value of property in the school district.

Oregon.—All data for Oregon school districts were obtained from official school district reports and compilations prepared by personnel of the State Department of Education. A procedure was developed to allocate to individual school districts the federal forest income allocated to the counties and distributed to school districts by the counties as county aid. This revenue was then recorded as being derived from federal sources. It should be noted that some Oregon school districts are members of Intermediate Education Districts. A major function of these intermediate districts is to equalize the tax load for school purposes throughout the area served. In school districts that were members of an intermediate district, a substantial amount of the revenue recorded as revenue from other intergovernmental sources would, in other districts, be recorded as revenue from local property taxes.

Texas.—All data with regard to receipts, expenditures, long term debt, and assessed valuation of Texas school districts were obtained from official records on file in the Texas Education Agency. Data with regard to the number of professional personnel and pupils were obtained from two publication of the Texas Education Agency—*Annual Statistical Report, 1961-62* and *Annual Statistical Report, 1966-67.* Only data on average daily attendance were available for the 1961-62 school year. These data were converted to average daily membership by multiplying by 105.71 based on the fact that in 1966-67 average daily attendance was reported to be 94.6 percent of average daily membership in Texas.[10] The assessed valuation of each school district in the sample was converted to true market value by applying the 1966-67 ratio of assessed to true value determined for each district by the Governor's Committee on Public School Education, as reported in the *Supplement to the Challenge and the Chance,* (Report of the Governor's Committee on Public School Education) published in 1968.

Utah.—All data for Utah school districts were obtained from official school district records and reports on file with the Utah State Board of Education.

Wisconsin.—All data for Wisconsin school districts were obtained from official school district records and reports on file with the State Department of Public Instruction and from official publications and reports of the Wisconsin Department of Revenue.

Data Transformation

Data concerning municipal receipts and expenditures contained in the *Census of Governments* are reported to the nearest thousand dollars. These data were converted to a per capita basis by dividing the total revenue from each source and expenditure for each function by the estimated population of the municipality obtained from *Sales Management.* A similar procedure was followed to convert revenue and expenditure data to a per household basis.

All data concerning receipts and expenditures of school districts were rounded to the nearest hundred dollars. Data concerning the market value of property in school districts were rounded to the nearest thousand dollars. The data were converted to a per pupil in average daily membership basis by dividing the revenue from each source and the expenditure for each function by the district's average daily membership for the appropriate school year.

It also was necessary to convert school district revenues and expenditures to a per capita basis to compare the categories on revenues by source and expenditures by function for school districts and municipalities combined. Since population estimates were not available for school districts, a formula for approximating the population of a school district based on the average daily membership of pupils in that district had to be devised. Multiple regression procedures utilizing a variety of independent variables were tested, but they failed to produce accurate predictions for the various district categories when compared with actual population data for county-unit school districts. It was found that accurate population estimates were available for all Wisconsin school districts for 1966.[11] Consequently, it was decided to use the ratio of average daily membership to total population in the Wisconsin school districts which met the criteria for inclusion in each of the seven categories used in the study to estimate the population of each school district included in the sample. Data with regard to the percentage school district average daily membership was of the estimated total population of the seventy six Wisconsin school districts which met the criteria for classification within the seven categories used in this study are shown in Table 2.4.

TABLE 2.4

PERCENTAGE SCHOOL DISTRICT AVERAGE DAILY MEMBERSHIP WAS OF TOTAL POPULATION IN 76 WISCONSIN SCHOOL DISTRICTS IN 1966*

	Percentage ADM of Total Population			
	Low	High	Median	Mean
Major Urban Core City	15.7	15.7	15.7	15.7
Minor Urban Core City	12.6	21.6	17.9	17.7
Independent City	14.9	22.3	18.1	18.5
Established Suburb	14.3	31.5	19.4	21.1
Developing Suburb	18.9	41.0	26.6	27.3
Small City	13.9	21.1	16.6	17.2
Small Town	12.9	34.2	22.4	23.4

*Adapted from Lyle R. Bruss, "An Analysis of Relationships Between Fiscal Capacity and Tax Effort in School Districts and Hypothetical Regional Taxing Agencies in Wisconsin," (unpublished Ph.D. dissertation, University of Wisconsin, 1970), p.49.

The detail lost by rounding data for school districts and municipalities, the procedures employed to obtain missing data, and the procedures employed in making the data transformations make it evident that the data employed in the statistical analyses do not represent the exact per capita revenue and expenditure figures for each district or category of districts. Rather, they represent close approximations of the actual per capita revenues by source and expenditures by function for each category of district.

Analysis of Data

There were seven sampling units basic to the study: (1) major urban core city, (2) minor urban core city, (3) independent city, (4) established suburb, (5) developing suburb, (6) small city, and (7) small town. Further, within each sampling unit data were gathered on school districts, municipalities, and counties. The plan of data collection called for multiple dependent measures on each subject. Accordingly, multivariate analysis techniques were necessary and two procedures, (1) factor analysis and (2) multivariate analysis of variance, were selected.

Factor Analysis

Before application of component and factor analysis to the correlation matrices, Bartlett's test of sphericity was computed. This test involves the hypothesis that the sample correlation matrix came from a population where the correlations differed only randomly from zero. The computational formula for the test is:

$$1\ [(N\text{-}1) - 1/6\ (2P+5)]\ \text{Log}_e\ /R/$$

where N is the number of observations, P is the number of variables and /R/ is the determinant of the sample correlation matrix. The resultant value is approximately distributed as chi square with ½P(P-1) degrees of freedom.[12] Subsequently, four factoring procedures were utilized and will be described briefly in the following sections.

Principal Components

The correlation matrix R is subjected to an eigenvalue/vector decomposition $R = Q\,D^2\,Q^1$ corresponding to the m largest eigenvalues of R and the first m eigenvectors, then the matrix of component coefficients is defined as $F = QD$.[13] The procedure is that of deriving new sets of uncorrelated variables within the variable space. Those entities are dependent upon the scale of the original variables used in the analysis. The number of components retained is equal to the number of eigenvalues of R greater than one.

Uniqueness Rescaling

The matrix factored in this procedure is the original correlation matrix rescaled with estimates of uniqueness ($U^{-1}R\,U^{-1}$). The uniqueness is estimated with a diagonal matrix S^2 with elements $s_j^2 = \frac{1}{r^{jj}}$ where $r^{jk} = R^{-1}$. Communality is then estimated with the diagonal matrix $H^2 = I\text{-}S^2$ with ele-

ments $h_j^2 = 1 - S_j^2 = S$, which is the squared multiple correlation of variable j p 2,-1RU-1, an eigenvector value decomposition is performed: $P = QBQ^1$. If m raw factors are desired, then the m largest eigenvectors and eigenvalues are retained. A pattern matrix F is formed from $F = (U\bar{Q}B\text{-}I)^{1/2}$. The number of factors retained is equal to the number of eigenvalues of P greater than one—the strong lower bound.[14]

Alpha

In this procedure the reduced correlation matrix, rescaled with estimates of communality, is factored: $P = H^{-1}\ (R\text{-}U^2)H^{-1}$. An eigenvalue/vector decomposition is performed on P and the pattern matrix F is constructed by $F = H\bar{Q}B^{1/2}$. The number of factors extracted is equal to the eigenvalues of P greater than one—the weak lower bound.[15]

Image

This procedure works on a set of entities (called images) which are derived from the observed variables by means of linear transformation. There exists an image which corresponds to each of the observed variables, and which is defined as the corresponding variable fitted to the remaining P-1 observed variables in the least squares sense. The image covariance matrix is defined as: $G = R+S^2R^{-1}S^2\text{-}2S^2$, which is the matrix to be factored. This is accomplished by obtaining the principal components of $S^{-1}GS^{-1}$ through an eigenvalue/vector decomposition on $P = S^{-1}RS^{-1}$. The factors of G, denoted by F, are formed from the first m eigenvalues, $\bar{B}$, and the first m eigenvectors $\bar{Q}$: $F = S\bar{Q}\ [B^{-1/2}(\bar{B}\text{-}I)]$. The number of components retained is equal to the number of eigenvalues of P greater than one—the strong lower bound.[16]

All raw pattern matrices were rotated orthogonally according to the normal varimax criterion.

Multivariate Analysis of Variance

The general multivariate linear model is $X = A\&+e$ where X = the matrix of observation vectors, A = the design matrix, & = the matrix of unknown parameters, and e = the matrix of residual variates. It has been demonstrated that a univariate hypothesis can be generalized to the multivariate case by replacing the F ratio sums of squares by the appropriate matrix extensions. Thus an hypothesis regarding a vector of cell means may be tested while maintaining the Type 1 error rate.

Three vectors of variates—revenues, expenditures, and fiscal capacity measures—were utilized in the study, incorporating a one-way analysis for the years 1962 and 1967. The basic contrasts were conceptualized as follows:

1. Those to be demonstrated null,
2. those of interest, and
3. those of no interest.

The rationale for this approach was that the contrasts of interest manifest an appropriate sampling distribution, given the demonstrated nullity of previously

tested effects. Accordingly, the investigators are allowed only one rejection in each design.[17]

The program utilized was "multivariance", a univariate and multivariate analysis of variance and covariance routine written in FORTRAN IV and developed by Jeremy D. Finn, Department of Educational Psychology, State University of New York at Buffalo.[18] The program performs an exact least squares analysis according to the method described by Bock.[19] It is divided into three phases; input, estimation, and analysis. The input phase allows several forms of input plus algebraic and linear transformations of the original data set. The estimation phase will estimate the magnitude of the effects and their standard errors. The analysis phase is based entirely upon specification of single-degree-of-freedom planned contrasts. Those contrasts may either be tested individually or grouped into sources of variation. Discriminant analyses for each contrast may be performed. The variance of the discriminant function and the percentage of between-group variation attributable to it are computed. Raw and standardized discriminant function weights are calculated, and Bartlett's chi square test for the significance of successive canonical variates is carried out.

FOOTNOTES

1. Harvey E. Brazer, CITY EXPENDITURES IN THE UNITED STATES, Occasional Paper No. 66 (New York: National Bureau of Economic Research, 1959), 61-64.

2. LeRoy J. Peterson, Richard A. Rossmiller, Stewart D. North and Howard E. Wakefield, ECONOMIC IMPACT OF STATE SUPPORT MODELS ON EDUCATIONAL FINANCE (Madison, Wis.: School of Education, The University of Wisconsin, 1963), 6-7, 182-88.

3. U. S. Office of Education, EDUCATION DIRECTORY, PART II: PUBLIC SCHOOL SYSTEMS, 1968-69 (Washington, D.C.: GPO, 1969).

4. Bureau of the Census, STANDARD METROPOLITAN STATISTICAL AREAS IN THE UNITED STATES AS DEFINED ON MAY 1, 1967, WITH POPULATION IN 1960 AND 1950, Current Population Reports, Series P-23, No. 23, October 9, 1967 (Washington, D.C.: GPO, 1967).

5. U. S. Office of Education, EDUCATION DIRECTORY, PART II: PUBLIC SCHOOL SYSTEMS, 1962-63 (Washington, D.C.: GPO, 1963).

6. U. S. Office of Education, FINANCIAL ACCOUNTING FOR LOCAL AND STATE SCHOOL SYSTEMS, State Educational Records and Reports Series: Handbook II (Washington, D.C.: GPO, 1957).

7. Data for 1962 were obtained from U.S. Department of Commerce, Bureau of the Census, 1962 CENSUS OF GOVERNMENTS: Vol. 4, No. 2--FI-

NANCES OF COUNTY GOVERNMENTS and Vol. 4, No. 3–FINANCES OF MUNICIPALITIES AND TOWNSHIP GOVERNMENTS (Washington, D.C.: GPO, 1964). Data for 1967 were obtained from U. S. Department of Commerce, Bureau of the Census, 1967 CENSUS OF GOVERNMENTS: Vol. 4, No. 3–FINANCES OF COUNTY GOVERNMENTS and Vol. 4, No. 4–FINANCE OF MUNICIPALITY AND TOWNSHIP GOVERNMENTS (Washington, D.C.: GPO, 1969).

8. Data for 1962 were obtained from "Survey of Buying Power", SALES MANAGEMENT, June 10, 1963. Data for 1967 were obtained from "Survey of Buying Power", SALES MANAGEMENT, June 10, 1968.

9. Research Division, National Education Association, RANKINGS OF THE STATES, 1967, (Washington, D.C.: NEA, 1967), 20.

10. *Ibid.*

11. State of Wisconsin, SUPPLEMENT TO TAXES, AIDS AND SHARED TAXES IN WISCONSIN MUNICIPALITIES, 1966, A Report prepared for the Governor's Task Force on Local Government Finance and Organization (Madison, Wis.: Department of Revenue, 1968).

12. Sigmond Tobias and James E. Carlson "Brief Report: Bartlett's Test of Sphericity and Chance Findings in Factor Analysis", MULTIVARIATE BEHAVIORAL RESEARCH, IV (July, 1969), 375-77.

13. Harold Hotelling, "Analysis of Complex Statistical Variables into Principal Components," JOURNAL OF EDUCATIONAL PSYCHOLOGY, (Sept/Oct., 1933), 417-41, 498-52.

14. University of Wisconsin Computing Center, FACTOR 1: FACTOR ANALYSIS C (Madison: University of Wisconsin Computing Center, 1969), 24.

15. Henry F. Kaiser and John Caffery, "Alpha Factor Analysis," PSYCHOMETRIKA, XXX (March, 1965), 1-14.

16. Louis Guttman, "Image Theory for the Structure of Quantitative Variates," PSYCHOMETRIKA, XVIII (December, 1953), 277-96

17. Donald F. Morrison, MULTIVARIATE STATISTICAL METHODS (New York, McGraw-Hill, 1967), 164-65.

18. Jeremy D. Finn, MULTIVARIANCE, Version 4 (Buffalo, N.Y.: State University of New York at Buffalo, 1968), 1-8.

19. R. Darrel Bock, "Programming Univariate and Multivariate Analysis of Variance," TECHNOMETRICS, V (1963), 95-117.

CHAPTER III

ANALYSES OF DATA: SCHOOL DISTRICTS

In this chapter will be reported the results obtained from analyses of data regarding revenues, expenditures, and measures of fiscal capacity of the 221 school districts which comprised the sample. The results of factor analyses and analyses of variance of data for the 1961-62 and 1966-67 school years will be provided.

Four factoring procedures were employed--alpha, uniqueness rescaling, principal components, and image. The technical distinction between a "factor" and a "component" is recognized, but for purposes of convenience the generic term "factor" occasionally will be employed in discussing and comparing the results obtained from the various procedures. In interpreting the factor solutions, a coefficient of .40 was chosen arbitrarily as the criterion for determining whether or not a variable was associated with a given factor.

Multivariate analyses of variance were used to test for differences between categories with regard to sources of revenue, purposes of expenditures, and measures of fiscal capacity. One-way analyses of variance were used to test for differences between categories in pupil-teacher ratio and in property tax rates. Since multivariate theory precludes further comparisons between categories once a null hypothesis is rejected, it is important that the planned order of comparisons correspond with the likelihood that the null hypothesis relation to a given comparison will be rejected. The program used for the multivariate analysis of variance also provided univariate and step-down F ratios for each variable. The univariate F ratio takes no account of dependencies among variables and thus is of somewhat limited usefulness. The step-down F ratios represent the contribution of each variable with all previously entered variables treated as covariates.

The chapter will be concluded with comment regarding differences which arose between 1961-62 and 1966-67. Such differences cannot properly be termed trends, since at least one additional set of data taken at another point in time would be required to establish a trend line. However, differences which do arise may be viewed as descriptive of the types of changes which occurred between the two points in time for which data were obtained.

Analyses of Data for 1961-62

Data for the 1961-62 school year were standardized on a per pupil in average daily membership basis, as described in Chapter II, and subjected to factor analyses and to multivariate and one-way analyses of variance. In the first portion of this section the results of the factor analysis procedures will be reported. The results obtained from analyses of variance of revenue, expenditure, and fiscal capacity variables will be presented in the latter portion of this section.

Mean Revenue and Expenditure

In Table 3.1 are reported the mean and standard deviation of each variable included in the factor analyses, both for each category of district and for the total sample. It is of interest to note that the established suburb, developing suburb, and small town categories fared substantially better than did the four city categories in mean revenue per pupil from state sources. In mean revenue per pupil from local property tax, the two suburb categories again ranked highest, but the small town category ranked lowest. School districts in the small town category raised only about one-half as much per pupil from the local property tax as did school districts in the established suburb category. Revenue from state sources and revenue from local property tax constituted by far the most important sources of revenue for school districts in all categories.

With regard to expenditures, instruction was by far the largest component of expenditure in each category of district, ranging from a high mean expenditure of $386 per pupil in ADM in the developing suburb category to a low mean expenditure of $258 per pupil in ADM in the small town category. Mean expenditure per pupil for transportation was relatively low in the four city categories, and was relatively high in the developing suburb and small town categories. Mean expenditure per pupil for capital outlay was highest by far in the developing suburb category and lowest in the minor urban core city category. Mean expenditure per pupil for debt service, on the other hand, was highest in the established suburb category. The mean expenditure for community services was minimal in all categories. The mean expenditure per pupil for administration was quite consistent over all district categories, ranging from a high of $14 per pupil in the two suburb categories to a low of $9 per pupil in the major urban core city category. Very little money was expended for either attendance services or health services in any category, at least on a per pupil basis. Fixed charges were highest in established and developing suburbs and showed little difference in the other five district categories. Mean expenditure per pupil for operation and maintenance was highest in the major urban core city category and lowest in the small town category. Expenditures for all other purposes typically were quite small and did not vary a great deal from one category to another.

As one would expect, mean long term debt was highest in the developing suburb category ($1006/pupil in ADM) where school construction to meet the needs of a growing population is a continuing problem. Mean long term debt per pupil also was high in the established suburb category and was lowest in the major urban core city category ($345/pupil in ADM).

Factor Analyses

Although four types of factoring procedures were applied to the combined revenue and expenditure data for the 221 sample districts, results will be reported only for the alpha and image procedures. Comment will be made relative to the principal components and uniqueness rescaling procedures where the results obtained from these procedures differed from those reported for the alpha and image procedures.

The determinant of the correlation matrix was .00194, which led to rejection

TABLE 3.1

MEANS AND STANDARD DEVIATIONS OF SIX REVENUE VARIABLES, ELEVEN EXPENDITURE VARIABLES, AND LONG TERM DEBT FOR THE TOTAL SAMPLE AND BY CATEGORIES FOR THE 1961-62 SCHOOL YEAR (DATA STANDARDIZED ON PER PUPIL IN AVERAGE DAILY MEMBERSHIP

Variable	Category A Mean	Category A S.D.	Category B Mean	Category B S.D.	Category C Mean	Category C S.D.	Category D Mean	Category D S.D.	Category E Mean	Category E S.D	Category F Mean	Category F S.D.	Category G Mean	Category G S.D.	All Districts Mean	All Districts S.D.
Revenue from:																
1. State	$156	$ 40	$177	$ 48	$167	$ 73	$246	$111	$ 240	$111	$182	$ 72	$254	$104	$208	$ 94
2. Federal	9	11	14	30	9	13	7	12	6	9	11	28	7	8	9	18
3. Other governmental agencies	4	12	6	22	15	24	13	34	5	21	17	39	17	39	12	31
4. Property tax	238	96	207	96	223	103	280	149	252	158	170	100	146	89	215	124
5. Other local taxes	13	24	3	8	2	7	5	16	8	19	4	17	5	13	5	15
6. All other sources	10	7	8	6	12	15	14	15	21	45	15	28	10	12	13	23
Expenditures for:																
1. Transportation	2	1	4	5	7	8	17	10	28	15	11	8	27	16	15	14
2. Capital outlay	52	34	46	48	63	93	77	96	187	257	47	75	95	142	84	139
3. Debt service	32	22	27	18	59	93	79	88	68	47	36	30	65	90	54	68
4. Community services	3	3	0	1	2	4	1	1	1	2	1	1	2	3	1	2
5. Administration	9	3	10	4	10	3	14	7	14	8	11	4	11	4	12	6
6. Instruction	283	39	271	61	279	43	329	62	386	541	331	351	258	55	307	258
7. Attendance services	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
8. Health services	3	4	2	2	2	4	6	4	6	5	2	3	3	4	4	4
9. Fixed charges	23	27	17	25	19	26	58	107	43	34	19	26	24	25	29	51
10. Operation and Maintenance	74	90	44	19	48	18	57	18	51	23	41	20	38	17	48	29
11. All other purposes	4	5	2	3	4	5	9	6	7	6	3	5	3	5	5	5
Total long term debt	345	228	476	257	521	287	907	492	1006	640	520	285	548	413	643	458
	N= 13		N= 34		N= 35		N=35		N- 34		N= 35		N=35		N= 221	

Category A = Major Urban Core City
Category B = Minor Urban Core City
Category C = Independent City
Category D = Established Suburb
Category E = Developing Suburb
Category F = Small City
Category G - Small town or agricultural service center

of the hypothesis that correlations of the variables in the population differed only randomly from zero when tested using Bartlett's test of sphericity.

Table 3.2 displays the solution provided by the alpha factoring procedure utilizing six revenue variables, eleven expenditure variables, and long term debt for the total sample of school districts. Table 3.3 displays the solution provided by the image factor analysis procedure applied to these same data. Comparison of the solutions obtained using the alpha and image procedures with the solutions obtained using the principal components and uniqueness rescaling procedures revealed that the factor matrices were very similar in each case.

The six factors extracted by the alpha procedure accounted for only 48.3 percent of the total variance; the ten components extracted by the image procedure accounted for only 35.5 percent of total variance. The relatively small amount of variance accounted for by the factor analysis procedures makes interpretation of the solutions difficult, and the results must be viewed as tentative.

TABLE 3.2

ROTATED FACTOR MATRIX, ALPHA PROCEDURE, FOR SIX REVENUE VARIABLES, ELEVEN EXPENDITURE VARIABLES AND LONG TERM DEBT FOR THE TOTAL SAMPLE (221 DISTRICTS) FOR THE 1961-62 SCHOOL YEAR (DATA STANDARDIZED ON PER PUPIL IN AVERAGE DAILY MEMBERSHIP)

Variable	Factors I	II	III	IV	V	VI	H_2
Revenue from:							
1. State	.900	-.215	.243	-.011	.046	-.301	.762
2. Federal	-.062	-.074	-.084	-.095	.383	.010	.129
3. Other governmental agencies	-.177	-.004	-.017	-.098	.006	.652	.320
4. Local property tax	.074	.835	.277	.008	-.324	.099	.759
5. Other local taxes	.029	-.072	.013	.580	-.033	-.039	.221
6. All other sources	.057	.243	.229	.013	-.074	.248	.167
Expenditures for:							
1. Transportation	.373	-.063	.504	.145	.034	.011	.443
2. Capital outlay	.019	.243	.606	-.069	-.047	-.025	.366
3. Debt service	.091	.102	.447	.114	-.200	.281	.343
4. Community services	.045	.017	.053	.634	.005	-.006	.260
5. Administration	.043	.538	.073	-.136	.053	-.005	.317
6. Instruction	.202	.087	.016	-.053	-.087	.047	.079
7. Attendance services	-.234	-.129	-.116	.412	.628	-.152	.349
8. Health services	.706	.388	.208	.160	-.200	-.163	.727
9. Fixed charges	.534	.230	.131	.098	-.112	.019	.377
10. Operation and Maintenance	.209	.391	.093	.069	-.209	.277	.338
11. All other purposes	.471	.636	.173	.032	-.178	-.039	.606
Long term debt	.299	.221	.778	.006	-.193	-.057	.624
Factor variance	2.24	2.01	1.74	1.02	.87	.80	
% of factor variance	25.8	23.1	20.0	11.8	10.1	9.2	
% of total variance=48.3							

TABLE 3.3

RDTATED COMPDNENT MATRIX, IMAGE PRDCEDURE, FDR SIX REVENUE VARIABLES, ELEVEN EXPENDITURE VARIABLES, AND LONG TERM DEBT FOR THE TOTAL SAMPLE (221 DISTRICTS) FOR THE 1961-62 SCHODL YEAR (DATA STANDARDIZED ON PER PUPIL IN AVERAGE DAILY MEMBERSHIP)

Variable	Components									
	I	II	III	IV	V	VI	VII	VIII	IX	X
Revenue from:										
1. State	.800	-.107	.107	.049	.023	-.160	-.035	-.025	-.014	.001
2. Federal	-.074	-.113	-.101	-.026	-.251	-.013	.005	.001	-.001	.000
3. Dther governmental agencies	-.302	.012	.042	-.091	.028	.380	-.000	.013	.001	-.004
4. Local property tax	.009	.705	.362	-.012	.251	.028	.080	.039	.031	-.003
5. Other local taxes	.050	-.054	-.001	.410	.024	-.017	.018	-.017	-.008	.005
6. All other sources	.057	.226	.213	-.006	.095	.165	.002	-.060	-.008	.021
Expenditures for:										
1. Transportation	.458	-.055	.377	.114	-.019	.024	-.106	-.016	-.057	-.003
2. Capital outlay	.092	.217	.510	-.050	.056	-.046	.002	-.021	-.027	.009
3. Debt service	.064	.153	.462	.073	.155	.155	.029	.052	.041	-.015
4. Community services	.052	.033	.046	.449	.003	-.015	-.012	.015	.010	-.005
5. Administration	.017	.494	.083	-.092	.003	-.022	-.067	-.013	-.005	-.002
6. Instruction	.169	.117	.030	-.048	.086	.028	.010	.062	-.000	.002
7. Attendance services	-.192	-.219	-.157	.306	-.281	-.105	-.055	-.001	-.005	-.004
8. Health services	.655	.387	.185	.109	.208	-.116	.055	-.019	.037	.005

TABLE 3.3 (cont.)

Variable	Components I	II	III	IV	V	VI	VII	VIII	IX	X
9. Fixed charges	.492	.262	.119	.073	.154	.012	.088	-.002	.028	-.003
10. Operation and Maintenance	.099	.411	.162	.024	.209	.161	.110	.041	-.021	-.001
11. All other purposes	.404	.573	.212	.017	.203	-.037	.044	.010	.039	-.005
Long Term Debt	.385	.261	.581	.010	.156	-.044	.016	.001	.020	-.002
Factor variance	2.025	1.739	1.308	.524	.427	.280	.053	.016	.012	.001
% of factor variance	31.7	27.2	20.5	8.2	6.7	4.4	0.8	0.3	0.2	0

% of total variance=35.5

Four variables—revenue from the state, and expenditure for health services, for fixed charges, and for all other purposes—loaded on Factor I in the alpha procedure (a compact solution). The same four variables loaded on Component I obtained from the image procedure (a dispersed solution), and expenditure for transportation also loaded on this component in the image solution.

The second factor extracted by each procedure was very similar. Revenue from local property tax and expenditure for administration and for all other purposes loaded on the second factor obtained in each solution. Expenditure for operation and maintenance carried a weight of .391 on Factor II from the alpha procedure and a weight of .411 on Component II from the image procedure.

The third factor extracted in each procedure was very similar and was associated with expenditure for capital outlay and for debt service and with long term debt per pupil in ADM. Expenditure for transportation also was associated with Factor III in the alpha procedure.

Revenue from other local taxes and expenditure for community services were the variables associated with the Factor IV extracted using the alpha procedure and with Component IV obtained using the image procedure. Expenditure for attendance services also was associated with this factor in the alpha procedure.

No variables loaded at a level of .40 or higher on any of the remaining components extracted using the image procedure. Expenditure for attendance services was associated with Factor V from the alpha procedure, and revenue from other governmental agencies was associated with Factor VI from the alpha procedure.

In summary, each factoring procedure extracted three relatively strong factors. The first factor, which accounted for 31.7 percent of the factor variance in the image procedure and 25.8 percent of the factor variance in the alpha procedure, was most closely associated with revenue from state sources and with expenditure for health services, for fixed charges, and for all other purposes. The second factor extracted in each procedure was associated most closely with revenue from local property taxes and also was associated with expenditure for administration and for all other purposes. The second factor accounted for 27.2 percent of the factor variance in the image procedure and 23.1 percent of the factor variance in the alpha procedure. The third factor extracted was clearly related to expenditure for capital outlay and to district indebtness. It accounted for 20.5 percent of the variance in the image procedure and 20.0 percent of the variance in the alpha procedure. The uniqueness estimates shown in Table 3.2 and the results of the various factor analyses revealed that many of the eighteen variables which were employed possessed a high degree of uniqueness, i.e., they measured attributes which had little in common.

Analyses of Variance

Multivariate analyses of variance were performed on sources of revenue, purposes of expenditure, and measures of fiscal capacity. One-way analyses of variance were performed on pupil-teacher ratio and on property tax rate.

Sources of Revenue

Table 3.4 shows the a priori planned order of comparisons between district

TABLE 3.4

PLANNED ORDER OF COMPARISONS BETWEEN DISTRICT CATEGORIES ON REVENUE DATA FOR 1961-62

Design Matrix	Category of District A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2				X	X		
Comparison 3						X	X
Comparison 4					X	X	
Comparison 5			X	X			
Comparison 6		X	X				

categories in the multivariate analysis of variance design employed in the analysis of revenue data. Multivariate theory precludes further comparisons once a null hypothesis is rejected. Consequently, it was considered important to order the comparisons in a manner corresponding with our a priori judgment of the likelihood that the null hypothesis relating to a given comparison would be rejected. As shown in Table 3.4, the first planned comparison was between categories A and B; the second comparison was between categories D and E; the third between categories F and G; etc. Because distribution theory of multivariate analysis permits only one rejection in a series of ordered hypotheses, it was decided to treat all comparisons after the first two as a single source of variation, and to examine the contribution made by each of the remaining categories to the rejection of the null hypothesis, i.e., a post-hoc analysis of the sources of variation.

In Table 3.5 are displayed the results of the test of H_1—there exist no significant differences in the sources of revenue of school districts in Category A (major urban core city) and school districts in Category B (minor urban core city). The F ratio obtained when H_1 was subjected to multivariate analysis of

TABLE 3.5

H_1: A=B (MAJOR URBAN CORE CITY VS. MINOR URBAN CORE CITY) REVENUE DATA FOR 1961-62

Multivariate F Ratio = 1.031; p = .405; df = 6 and 209

Source of Revenue	Mean Square	Univariate F*	p	Step-down F	p
1. State	.420	.533	.466	.533	.466
2. Federal	.020	.555	.457	.560	.455
3. Other governmental agencies	.005	.058	.811	.338	.562
4. Local property tax	.933	.669	.415	.340	.561
5. Other local taxes	.106	4.538	.034	4.406	.037
6. All other sources	.006	.098	.755	.019	.890

*df = 1 and 214

variance, 1.031, and the associated probability of occurrence, .406, led to acceptance of the null hypothesis. Univariate and step-down F ratios for each of the six revenue variables also are reported in Table 3.5. However, acceptance of the null hypothesis precluded further interpretation of the data.

There are presented in Table 3.6 the results of the test of H_2, i.e., there exist no significant differences between the sources of revenue of school districts in Category D (established suburb) and those in Category E (developing suburb). A multivariate F ratio of 1.110, with an associated probability of .357, was obtained. Thus, the null hypothesis was tenable. Univariate and step-down F ratios for each variable also are presented, but acceptance of the null hypothesis precluded further interpretation.

TABLE 3.6

H_2: D=E (ESTABLISHED SUBURB VS. DEVELOPING SUBURB) REVENUE DATA FOR 1961-62

Multivariate F Ratio = 1.110; p = .357; df = 6 and 209

Source of Revenue	Mean Square	Univariate F*	p	Step-down F	p
1. State	.068	.087	.769	.087	.769
2. Federal	.004	.120	.729	.121	.728
3. Other governmental agencies	.122	1.287	.258	1.890	.171
4. Local property tax	1.419	1.017	.314	1.302	.255
5. Other local taxes	.017	.715	.399	.388	.534
6. All other sources	.066	1.180	.279	2.846	.093

*df = 1 and 214

H_3 tested for significant differences in all remaining sources of variation. The results are reported in Table 3.7. A multivariate F ratio of 3.7227 was obtained, with an associated probability of occurrence of .0001. The null hypothesis was rejected. Examination of the univariate and step-down F ratios shown in Table

TABLE 3.7

H_3: B=C, C=D, E=F, F=G (ALL REMAINING SOURCES OF VARIATION) REVENUE DATA FOR 1961-62

Multivariate F Ratio = 3.723; p = .0001; df = 24 and 733

Source of Revenue	Mean Square	Univariate F*	p	Step-down F	p
1. State	7.650	9.713	.0001	9.713	.0001
2. Federal	.035	.972	.424	.836	.504
3. Other governmental agencies	.111	1.169	.326	3.505	.009
4. Local property tax	10.521	7.541	.0001	7.674	.0001
5. Other local taxes	.010	.434	.784	.471	.757
6. All other sources	.074	1.325	.262	.599	.664

*df = 4 and 214

TABLE 3.8

DISCRIMINANT FUNCTION COEFFICIENTS FOR THE CANONICAL VARIATES INCLUDED WITHIN H_3, PERCENTAGE OF CANONICAL VARIATION ATTRIBUTABLE TO EACH COMPARISON, AND SIGNIFICANCE OF SUCCESSIVE COMPARISONS, 1961-62

	Raw Coefficients				Standardized Coefficients			
Source of Revenue	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4
1. State	1.199	.164	−.204	−.020	1.064	.145	−.182	−.018
2. Federal	−.965	−.845	−1.515	2.624	−.184	−.161	−.288	.501
3. Other governmental agencies	1.549	1.279	1.328	−.937	.477	.394	.409	−.288
4. Local property tax	.210	−.810	.023	−.200	.248	−.956	.027	−.236
5. Other local taxes	.781	−.800	−2.406	2.769	.119	−.122	−.368	.423
6. All other sources	.111	.105	2.586	3.314	.026	.025	.612	.784
% of canonical variation	57.68	35.96	4.21	2.15				

Bartlett's test for significance of successive comparisons:
Roots 1-4 Chi Square = 85.57, df = 24, p = .0001
Roots 2-4 Chi Square - 37.28, df = 15, p = .001
Roots 3-4 Chi Square = 5.92, df = 8, p = .656
Root 4 Chi Square = 2.01, df = 3, p = .571

3.7 revealed that three variables—revenue from the state, from other governmental agencies, and from local property taxes—were major contributors to rejection of the null hypothesis.

In Table 3.8 are displayed the discriminant function coefficients for the canonical variates included within H_3. Bartlett's test for significance of successive comparisons indicated root 1-4 was significant at the .0001 level, that root 2-4 was significant at the .001 level, and that the two remaining roots were not significant. It should be noted that the order in which comparisons are made may affect the extent to which significant differences are found between categories.

The discriminant function coefficients displayed in Table 3.8 indicate the relative utility of the variables as discriminators in the four canonical variates included in H_3. In canonical variate 1, revenue from the state was the variable which best discriminated. Revenue from local property taxes was the best discriminator in canonical variate 2; revenue from all other sources proved to be the best discriminator in canonical variates 3 and 4. It should be remembered, however, that the last two comparisons accounted for less than 6.5 percent of the canonical variance.

After completion of the foregoing analyses, the theoretical restriction with regard to additional analysis after rejection of a null hypothesis was relaxed and, in order to obtain maximum information with respect to differences between categories, all of the original planned comparisons were made. Multivariate F ratios, the probability of occurrence of each F ratio, and the standardized discriminant function coefficients of each variable for the various comparisons are shown in Table 3.9.

TABLE 3.9

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS AND MULTIVARIATE F RATIOS FOR THE SIX PLANNED COMPARISONS ON REVENUE DATA FOR 1961-62

Source of Revenue	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
1. State	.359	−.837	−1.049	.495	−.040	.977
2. Federal	.180	.426	.035	.183	.041	−.326
3. Other governmental agencies	.196	−.650	−.402	.726	.532	.322
4. Local property tax	−.297	.034	.088	.627	−.765	−.210
5. Other local taxes	−.851	−.093	−.097	−.218	.080	−.084
6. All other sources	−.060	−.224	−.112	−.702	−.224	−.312
Multivariate F ratio	1.031	2.560	2.820	1.110	3.129	2.130
df	6&209	6&209	6&209	6&209	6&209	6&209
p	.406	.023	.012	.357	.006	.051

Only in the comparison involving the developing suburb and the small city categories was the multivariate F ratio significant at beyond the .01 level. In the comparisons involving the minor urban core city and independent city categories and the independent city and established suburb categories the multivariate F ratio was significant at beyond the .05 level.

Revenue from the state was the variable which best discriminated between the major and minor urban core city categories, the minor urban core city and independent city categories, and the small city and small town categories. In the remaining two comparisons—established suburb vs. developing suburb and developing suburb vs. small city—revenue from local property taxes was the most useful discriminator.

Purposes of Expenditure

Table 3.10 shows the planned order of comparisons between district categories on expenditure data for the 1961-62 school year. Preliminary examination of the data indicated that only one or two of the planned comparisons could be made before a null hypothesis would be rejected. Consequently, H_1 compared Category A and Category B, and H_2 compared all other sources of variation.

TABLE 3.10

PLANNED ORDER OF COMPARISONS BETWEEN DISTRICT CATEGORIES ON EXPENDITURE DATA FOR 1961-62

Design Matrix	Category of District						
	A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2						X	X
Comparison 3					X	X	
Comparison 4				X	X		
Comparison 5			X	X			
Comparison 6		X	X				

In Table 3.11 are displayed the results of the test of H_1 (no significant difference between the major urban core city and minor urban core city categories). A multivariate F ratio of 1.924 was obtained which was significant at the .03 level. Since the .001 level had been chosen for rejection of the tests of school district data the null hypothesis was accepted. Table 3.10 also displays univariate and step-down F ratios for each of the 12 variables (11 expenditure variables and long term debt) which were utilized in the analysis. Although acceptance of the null hypothesis theoretically forecloses interpretation of the step-down F ratios, a perusal of them is not forbidden. Expenditure for

TABLE 3.11

H_1: A=B (MAJOR URBAN CORE CITY VS. MINOR URBAN CORE CITY) EXPENDITURE DATA FOR 1961-62

Multivariate F Ratio = 1.924; p = .033; df = 12 and 203

Purpose of Expenditure	Mean Square	Univariate F*	p	Step-down F	p
1. Transportation	.002	.184	.668	.184	.668
2. Capital outlay	.036	.020	.887	.047	.829
3. Debt Service	.021	.047	.829	.067	.796
4. Community service	.006	7.831	.006	8.223	.005
5. Administration	.001	.184	.669	.133	.716
6. Instruction	.127	.019	.890	.034	.853
7. Attendance services	.000	.250	.618	.249	.618
8. Health services	.001	.384	.536	.811	.369
9. Fixed charges	.036	.143	.706	.047	.828
10. Operation and Maintenance	.858	10.374	.002	11.197	.001
11. All other purposes	.002	.544	.462	.002	.962
Long term debt	16.273	.971	.326	1.757	.186

*df = 1 and 214

community services and expenditure for operation and maintenance appear to constitute the major sources of difference between the two categories.

In Table 3.12 are displayed the results obtained from the test of H_2 (no significant difference in all remaining sources of variation). A multivariate F ratio of 4.542 was obtained, which was significant at the .0001 level. H_2 was therefore not accepted. Examination of the step-down F ratios indicated that

TABLE 3.12

H_2: B=C, C=D, D=E, E=F, F=G (ALL REMAINING SOURCES OF VARIATION) EXPENDITURE DATA FOR 1961-62

Multivariate F Ratio = 4.542; p = .0001; df = 60 and 959

Purpose of Expenditure	Mean Square	Univariate F*	p	Step-down F	p
1. Transportation	.411	33.363	.0001	33.363	.0001
2. Capital outlay	9.822	5.588	.0001	2.458	.034
3. Debt Service	1.516	3.375	.006	1.905	.095
4. Community services	.001	1.156	.332	1.089	.368
5. Administration	.016	4.647	.0005	4.013	.002
6. Instruction	8.258	1.238	.292	.784	.562
7. Attendance services	.000	3.892	.002	1.812	.112
8. Health services	.012	6.733	.0001	.896	.485
9. Fixed charges	1.008	4.056	.002	.772	.571
10. Operation and Maintenance	.185	2.249	.051	2.955	.014
11. All other purposes	.028	9.596	.0001	2.021	.077
Long term debt	205.273	12.242	.0001	7.429	.0001

*df = 5 and 214

the only variables which did not contribute a great deal to the variation were expenditure for community services, for instruction, for health services, and for fixed charges. The largest sources of variance were expenditure for transportation and long term debt. Other important sources of variance were expenditure for capital outlay, for administration, for operation and maintenance, and for all other purposes.

In Table 3.13 are shown the discriminant function coefficients for the canonical variates included within H_2, the percentage of the canonical variation attributable to each comparison, and the level of significance of the successive comparisons. Nearly 67 percent of the canonical variation was accounted for by canonical variate 1. The variable which discriminated most effectively with regard to this canonical variate was expenditure for transportation. About 20 percent of the canonical variation was accounted for by the second canonical variate. The variable which discriminated most clearly with regard to canonical variate 2 was long term debt. Canonical variate 3 accounted for about 8 percent of the canonical variation, and the variable which discriminated most effectively was expenditure for all other purposes. The fourth canonical variate accounted for less than 3 percent of the canonical variation. Two variables, expenditure for capital outlay and expenditure for health services, were the most effective discriminators with regard to this variate. Canonical variate 5 accounted for about 2 percent of the canonical variation. The variable which discriminated most clearly with regard to this variate was expenditure for attendance services.

Bartlett's test for significance of successive comparisons indicated that roots 1-5 and 2-5 were significant at the .0001 level, and that roots 3-5, 4-5 and 5 were not significant.

When the restriction with regard to the conduct of additional analysis after rejection of a null hypothesis was relaxed and all planned comparisons were made the results displayed in Table 3.14 were obtained. For all comparisons except that between the major and minor urban core city categories a multivariate F ratio significant at beyond the .0001 level was obtained. For the comparison involving the major urban core city and minor urban core city categories, the multivariate F ratio was significant at beyond the .05 level.

The variable which proved to be the most useful discriminator in the comparison of the major and minor urban core city categories was expenditure for operation and maintenance. In the comparisons involving the minor urban core city and independent city categories, the independent city and established suburb categories, and the small city and small town categories, expenditure for transportation was the variable which proved to be the best discriminator. In the remaining two comparisons—established suburb vs. developing suburb and developing suburb vs. small city—long term debt was the most potent discriminator.

Fiscal Capacity of School Districts

Data were obtained regarding three variables believed to reflect various aspects of the fiscal capacity of school districts. The market value of property in each school district included in the sample was obtained from official state records and standardized by dividing the market value of property by the number of pupils in ADM. Data with regard to estimated retail sales and effective buying

TABLE 3.13

DISCRIMINANT FUNCTION COEFFICIENTS FOR THE CANONICAL VARIATES INCLUDED WITHIN H_2, PERCENTAGE OF CANONICAL VARIATION ATTRIBUTABLE TO EACH COMPARISON, AND SIGNIFICANCE OF SUCCESSIVE COMPARISONS, EXPENDITURE DATA FOR 1961-62

	Raw Coefficients					Standardized Coefficients				
Purpose of Expenditure	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5
1. Transportation	8.388	3.702	1.129	−1.109	−2.049	.931	.441	.125	−.123	−.228
2. Capital outlay	.085	.313	−.325	.443	.270	.112	.414	−.431	.587	.358
3. Debt service	.094	.174	.864	.337	.333	.063	.117	.579	.226	.223
4. Community services	−1.411	.899	12.865	13.402	8.880	−.040	.025	.363	.378	.250
5. Administration	6.095	−3.725	−2.653	−5.456	−.165	.356	−.218	−.155	−.319	−.010
6. Instruction	.023	−.026	−.124	−.112	.102	.059	−.068	−.320	−.289	.262
7. Attendance services	−21.080	20.625	−27.658	−3.089	−73.140	−.204	.200	−.268	−.030	−.709
8. Health services	−1.275	3.311	−12.067	13.851	−7.045	−.055	.142	−.519	.596	−.303
9. Fixed charges	.023	−.374	.457	−.453	−.425	.012	−.186	.228	−.226	−.212
10. Operation and maintenance	−1.284	−.312	−.906	1.292	−1.482	−.369	−.090	−.260	.371	−.426
11. All other purposes	1.812	−7.360	12.438	−.288	−2.941	.098	−.400	.673	−.016	−.159
Long term debt	.004	−.192	−.105	−.080	.029	.015	−.787	−.431	−.328	.120
% of canonical variation	66.83	20.06	8.27	2.82	2.02					

Bartlett's test for significance of successive comparisons:
Roots 1-5 Chi Square = 247.12, df = 60, p = .0001
Roots 2-5 Chi Square = 97.66, df = 44, p = .0001
Roots 3-5 Chi Square = 40.79, df = 30, p = .090
Roots 4-5 Chi Square = 15.46, df = 18, p = .630
Root 5 Chi Square = 6.49, df = 8, p = .593

TABLE 3.14

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS AND MULTIVARIATE F RATIOS FOR THE PLANNED COMPARISONS, EXPENDITURE DATA FOR 1961-62

Purpose of Expenditure	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
1. Transportation	.230	.917	.937	.486	.391	.982
2. Capital outlay	−.162	.116	.032	.574	.299	.317
3. Debt service	−.008	.240	−.121	−.067	−.192	.323
4. Community services	−.564	.118	−.306	−.158	−.182	.118
5. Administration	.235	.279	.411	−.036	.343	.020
6. Instruction	.030	.017	.078	.090	.144	−.212
7. Attendance services	−.096	−.316	.032	.178	−.155	−.041
8. Health services	−.143	−.154	.053	.260	.304	.125
9. Fixed charges	.064	.064	.080	−.249	−.062	−.042
10. Operation and maintenance	−.796	−.301	−.263	−.122	−.052	−.242
11. All other purposes	−.015	.307	.054	−.593	−.043	.114
Long term debt	.455	−.296	.041	−.621	−.412	−.719
Multivariate F ratio	1.924	4.836	4.808	4.271	4.098	4.052
df	12 & 203	12 & 203	12 & 203	12 & 203	12 & 203	12 & 203
p	.033	.0001	.0001	.0001	.0001	.0001

income for the municipality with which each school district was most closely associated were obtained from *Sales Management's* "Survey of Buying Power" and were standardized on both per capita and per household bases.

In Table 3.15 are shown the means and standard deviations of each of the five variables for each district category. (Data on sales and income were not available for one municipality in Category B, thereby reducing to 34 the sample size in this category.) Mean property value per pupil was highest in the major urban core city category ($30,999), and ranged from a mean of $21,648 in the small town to a mean of $26,965 in the established suburb in the remaining categories. Mean retail sales per capita were highest in the small city category and lowest in the established suburb category, while mean retail sales per household were highest in the small town category and lowest in the established suburb category. Mean effective buying income per capita and mean effective buying income per household both were highest in the developing suburb category and lowest in the small town category.

Table 3.16 displays the matrix of correlations between the five variables used as measures of fiscal capacity based on data for the entire sample of 221 school districts. Property value per pupil was, for all practical purposes, uncorrelated with the other four variables. The correlation of retail sales per capita and retail sales per household was surprisingly low, undoubtedly reflecting differences between district categories in household size and in the distribution of retail sales. Correlations between retail sales per capita and the two measures of effective buying income were of the same order as the correlation between retail sales per capita and retail sales per household. The correlations between retail sales per household and the two measures of buying income were relatively low.

TABLE 3.15

MEANS AND STANDARD DEVIATIONS OF FIVE VARIABLES MEASURING FISCAL CAPACITY OF SCHOOL DISTRICT, BY CATEGORIES, FOR THE 1961-62 SCHOOL YEAR

	Category A		Category B		Category C		Category D		Category E		Category F		Category G	
Variable	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Property value/ pupil in ADM	$30,999	$8,845	$24,827	$14,511	$24,253	$4,898	$26,965	$17,696	$25,911	$21,192	22,397	$9,479	$21,648	$18,198
Retail sales/ capita	1,697	373	1,723	630	1,856	453	1,393	387	1,542	1,209	1,922	769	1,453	875
Retail sales/ household	5,314	788	5,684	1,739	6,008	1,177	4,827	1,344	5,336	4,634	6,230	2,296	6,280	7,916
Effective buying income/ capita	2,080	325	1,938	378	1,985	278	2,258	657	2,572	1,774	1,908	415	1,504	418
Effective buying income/ household	6,567	842	6,435	1,010	6,468	831	7,784	2,130	9,001	6,871	6,231	1,073	5,339	1,183
Number in sample	13		34		35		35		34		35		35	

Category A = Major Urban Core City
Category B = Minor Urban Core City
Category C = Independent City
Category D = Established Suburb
Category E = Developing Suburb
Category F = Small City
Category G = Small town or agricultural service center

TABLE 3.16

MATRIX OF CORRELATIONS OF VARIABLES MEASURING FISCAL CAPACITY OF SCHOOL DISTRICTS, 1961-62 SCHOOL YEAR*

Variable	1	2	3	4	5
1) Property value/pupil	1.000				
2) Retail sales/capita	−.095	1.000			
3) Retail sales/household	−.097	.640	1.000		
4) Effective buying income/ capita	−.118	.622	.342	1.000	
5) Effective buying income/ household	−.125	.589	.466	.958	1.000

*With n = 221, a correlation of .253 is statistically significant at the .01 level.

However, the correlation between the two measures of effective buying income was very high.

The data relative to fiscal capacity were subjected to a multivariate analysis of variance. The a priori planned order of comparisons between district categories is shown in Table 3.17. Examination of the data indicated, however, that a null hypothesis was likely to be rejected before all planned comparisons could be completed. Consequently, all sources of variance beyond the first comparison were combined in H_2.

Table 3.18 displays the results of the test of H_1, i.e., no significant difference between the major urban core city and minor urban core city categories. A multivariate F ratio of 1.123 was obtained which was significant at only the .349 level. Therefore, the null hypothesis was accepted.

Table 3.19 displays the results of the test of H_2 (no significant difference between all remaining categories). The multivariate F ratio of 3.926 obtained

TABLE 3.17

PLANNED ORDER OF COMPARISONS BETWEEN DISTRICT CATEGORIES ON FISCAL CAPACITY DATA FOR 1961-62

Design Matrix	Category of District A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2						X	X
Comparison 3					X	X	
Comparison 4				X	X		
Comparison 5			X	X			
Comparison 6		X	X				

was significant at the .0001 level. Thus, the hypothesis was rejected. The univariate and step-down F ratios provided information regarding the contribution of each of the five variables to the variance associated with H_2. It will be

TABLE 3.18

H_1: A=B (MAJOR URBAN CORE CITY VS. MINOR URBAN CORE CITY)
FISCAL CAPACITY DATA FOR 1961-62

Multivariate F Ratio = 1.123; p = .349; df = 5 and 210

Variable	Mean Square	Univariate F*	p	Step-down F	p
Property value/ pupil in ADM	390.191	1.727	.190	1.727	.190
Retail sales/ capita	22.414	.004	.950	.005	.943
Retail sales/ household	10,569.336	.070	.792	.073	.788
Effective buying income/capita	251,885.210	.389	.534	.743	.390
Effective buying income/household	383,593.500	.044	.834	3.060	.082

*df = 1 and 214

TABLE 3.19

H_2: B=C, C=D, D=E, E=F, F=G (ALL REMAINING SOURCES OF VARIATION)
FISCAL CAPACITY DATA FOR 1961-62

Multivariate F Ratio = 3.926; p = .0001; df = 25 and 782

Variable	Mean Square	Univariate F*	p	Step-down F	p
Property value/ pupil in ADM	174.822	.774	.570	.774	.570
Retail sales/ capita	16,610.432	2.932	.014	2.920	.014
Retail sales/ household	111,835.131	.740	.594	1.447	.209
Effective buying income/capita	4,459,156.500	6.880	.0001	14.046	.0001
Effective buying income/household	58,976,552.000	6.773	.0001	1.466	.202

*df = 5 and 214

TABLE 3.20

DISCRIMINANT FUNCTION COEFFICIENTS FOR THE CANONICAL VARIATES INCLUDED WITHIN H_2, PERCENTAGE OF CANONICAL VARIATION ATTRIBUTABLE TO EACH COMPARISON, AND SIGNIFICANCE OF SUCCESSIVE COMPARISONS, FISCAL CAPACITY DATA FOR 1961-62

	Raw Coefficients					Standardized Coefficients				
Variable	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5
Property value/ pupil in ADM	−.011	.015	.041	.030	.039	−.173	.226	.618	.444	.593
Retail sales/capita	.012	.006	−.010	−.007	.014	.922	.481	−.789	−.550	1.087
Retail sales/ household	.0003	.0005	.001	.003	−.003	.104	−.186	.390	1.308	−1.048
Effective buying income/capita	−.001	.003	.003	.002	−.004	−.396	2.476	2.039	1.277	−3.266
Effective buying income/household	−.0003	−.0008	−.0008	−.0004	.001	−.815	−2.222	−2.292	−1.158	3.062
% of canonical variation	76.34	20.23	3.24	0.16	0.03					

Bartlett's test for significance of successive comparisons:

Roots 1-5 Chi Square = 93.81, df = 25, p = .0001
Roots 2-5 Chi Square = 24.37, df = 16, p = .082
Roots 3-5 Chi Square = 3.66, df = 9, p = .933
Roots 4-5 Chi Square = .20, df = 4, p = .995
Roots 5 Chi Square = .03, df = 1, p = .864

noted that effective buying income per capita and retail sales per capita were the most important contributors to the variance which was found.

Table 3.20 contains discriminant function coefficients for the canonical variates included within H_2, shows the percentage of canonical variation attributable to each comparison, and indicates the significance of the successive comparisons. The discriminant function coefficients indicate that retail sales per capita was the most potent variable in discriminating with regard to canonical variate 1. The two measures of effective buying income proved to be the most potent discriminators with regard to canonical variates 2 and 3. Retail sales per household best discriminated with regard to canonical variate 4. The two measures of effective buying income discriminated most effectively with regard to canonical variate 5. The first two canonical variates accounted for over 96 percent of the canonical variation; the last two variates accounted for less than .2 percent of the canonical variation. The failure of property value per pupil in average daily membership to discriminate effectively in the various canonical variates is particularly noteworthy.

Application of Bartlett's test for significance of successive canonical comparisons revealed that the comparison involving roots 1-5 was significant at the .0001 level, and that the comparisons involving all other roots were not statistically significant.

The results displayed in Table 3.21 were obtained when the restriction with regard to further analysis after rejection of a null hypothesis was relaxed to permit completion of all planned comparisons shown in Table 3.17. A

TABLE 3.21

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS AND MULTIVARIATE F RATIOS FOR THE SIX PLANNED COMPARISONS, FISCAL CAPACITY DATA FOR 1961-62

Variable	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
Property value/ pupil in ADM	−.838	.070	−.013	−.331	−.228	−.100
Retail sales/ capita	.887	1.102	.929	1.016	.774	−.764
Retail sales/ household	−.742	−.217	.086	.076	.131	.314
Effective buying income/capita	−3.879	.342	1.383	−1.010	−.615	−1.914
Effective buying income/household	3.449	−1.389	−2.215	−.104	−.639	1.791
Multivariate F ratio	1.123	.629	2.559	3.353	11.424	2.804
df	5&210	5&210	5&210	5&210	5&210	5&210
p	.349	.678	.028	.006	.0001	.018

multivariate F ratio significant at beyond the .0001 level was found when the developing suburb category was compared with the small city category. A multivariate F ratio significant at beyond the .01 level was found when the established suburb category was compared with the small city category. A multivariate F ratio significant at beyond the .01 level was found when the established suburb category was compared with the developing suburb category. The multivariate F ratios found when the independent city category was compared with the established suburb category, and when the small city category was compared with the small town category, were significant at beyond the .05 level.

Effective buying income per capita was the variable which proved to be the most useful discriminator with regard to the major urban core city vs. minor urban core city and the small city vs. small town comparisons. In the comparisons involving the minor urban core city vs. independent city and the independent city vs. the established suburb categories, effective buying income per household was the most useful discriminator. With regard to the two remaining comparisons-established suburb vs. developing suburb and developing suburb vs. small city-retail sales per capita was the most potent discriminator. In no instance did property value per pupil in average daily membership appear as an effective discriminator in the comparisons between categories which were made.

Property Tax Rates

The local property tax rate was computed for each school district by dividing the school district's revenue from local property taxes for the 1961-62 school year by the market value of property in the district. The mean, variance, and standard deviation of the property tax rate for each of the seven school district categories is reported in Table 3.22. The mean property tax rate for the total sample was 10.257 mills. Mean property tax rates ranged from a low of 7.768 mills in the major urban core city category to a high of 12.647 in the developing suburb category. The mean tax rates in the two suburb categories were considerably higher than the mean tax rates in the remaining five categories.

The results of a one-way analysis of variance of property tax rates are shown in Table 3.23. The F ratio obtained was 2.151, which was significant at the .05

TABLE 3.22

PROPERTY TAX RATE IN MILLS FOR THE SEVEN SCHOOL DISTRICT CATEGORIES, 1961-62 SCHOOL YEAR

Category	N	Mean	Variance	S.D.
Major urban core city	13	7.768	.065	2.561
Minor urban core city	35	10.103	.612	7.816
Independent city	35	9.383	.189	4.347
Established suburb	35	12.496	.369	6.078
Developing suburb	32	12.647	.785	8.861
Small city	35	8.870	.398	6.307
Small town	35	9.174	.484	6.954
Grand mean =	220	10.257		

TABLE 3.23

ANALYSIS OF VARIANCE, PROPERTY TAX RATES FOR SEVEN SCHOOL DISTRICT CATEGORIES, 1961-62 SCHOOL YEAR

Source	Sum of Squares	Mean Square	df	F	P
Between groups	.057	.001	6	2.151	.049
Within groups	.949	.004	213		
Corrected total	1.006		219		
Correction for mean	2.315	2.315	1		
Uncorrected total	3.321		220		

level but not significant at the .01 level of confidence. Thus, there is reason to believe that the differences observed in property tax rates were unlikely to have occurred by chance.

Pupil-Professional Staff Ratio

The ratio of pupils to professional staff members in each district was computed by dividing the district's average daily membership for the 1961-62 school year by the number of full-time equivalent professional staff members reported by the district for that year. The mean and standard deviation of the pupil-professional staff ratio for each of the seven school district categories is shown in Table 3.24. The mean pupil-professional staff ratio for the total sample was 22.95:1, and ranged from a low of 22.16:1 in the developing suburb category to a high of 25.40:1 in the minor urban core city category. The mean ratios were remarkably similar in all categories except the major and minor urban core city categories, where they were noticeably higher.

In Table 3.25 are displayed the results of a one-way analysis of variance of pupil-professional staff ratios. The F value obtained, .956, was not significant at

TABLE 3.24

PUPILS IN AVERAGE DAILY MEMBERSHIP PER FULL TIME EQUIVALENT PROFESSIONAL STAFF MEMBER, 1961-62 SCHOOL YEAR

Category	N	Mean	Variance	S.D.
Major urban core city	13	24.30	1.27	1.130
Minor urban core city	35	25.40	306.77	17.515
Independent city	35	22.73	2.36	1.537
Established suburb	35	22.21	6.73	2.595
Developing suburb	32	22.16	6.73	2.595
Small city	35	22.38	2.80	1.672
Small town	35	22.25	4.94	2.223
Grand Mean =	220	22.95		

TABLE 3.25
ANALYSIS OF VARIANCE, PUPILS IN AVERAGE DAILY MEMBERSHIP PER FULL TIME EQUIVALENT PROFESSIONAL STAFF MEMBER, 1961-62 SCHOOL YEAR

Source	Sum of Squares	Mean Square	df	F	F
Between groups	302.369	50.395	6	.956	.456
Within groups	11226.405	52.706	213		
Corrected total	11528.774		219		
Correction for Mean	115864.710	115864.710	1		
Uncorrected total	127393.480		220		

the .05 level of confidence. The differences which were observed could easily have occurred by chance alone.

Analyses of Data for 1966-67

Data similar to those collected for the 1961-62 school year also were obtained for the 1966-67 school year and were subjected to the same types of statistical analysis. The data obtained included six revenue variables, eleven expenditure variables, long term debt, three measures of fiscal capacity (property value, retail sales, and effective buying income), property tax rates, and pupil-professional staff ratios. All data regarding revenues, expenditures, long term debt, and property valuation were standardized by dividing the amount reported for each district by the average daily membership of the district for the 1966-67 school year. The data regarding retail sales and effective buying income were standardized on both per capita and per household bases. All school district revenues were included in one of the six revenue categories.

Expenditures for educational programs funded under Title I of the Elementary and Secondary Education Act were distributed to the appropriate expenditure category for purposes of this analysis with the exception of Kentucky school districts where such expenditures were recorded under "expenditure for all other purposes." All school district expenditures except those for school lunches (which could not accurately be determined) were included in one of the eleven expenditure categories.

Mean Revenue and Expenditure

In Table 3.26 are displayed the means and standard deviations of each of the six revenue variables, the eleven expenditure variables, and long term debt for the 1966-67 school year. These data are shown for each category of district as well as for the entire sample of districts. Revenue from state sources and revenue from local property taxes constituted the most important sources of revenue for each category of school district.

TABLE 3.26

MEANS AND STANDARD DEVIATIONS OF SIX REVENUE VARIABLES, ELEVEN EXPENDITURE VARIABLES, AND LONG TERM DEBT FOR THE TOTAL SAMPLE AND BY CATEGORIES FOR THE 1966-67 SCHOOL YEAR (DATA STANDARDIZED ON PER PUPIL IN AVERAGE DAILY MEMBERSHIP)

Variable	Category A Mean	Category A S.D.	Category B Mean	Category B S.D.	Category C Mean	Category C S.D.	Category D Mean	Category D S.D.	Category E Mean	Category E S.D.	Category F Mean	Category F S.D.	Category G Mean	Category G S.D.	All Districts Mean	All Districts S.D.
Revenue from:																
1. State	$216	$ 83	$239	$ 91	$244	$141	$391	$196	$ 374	$186	$245	$149	$337	$167	$301	$165
2. Federal	63	36	54	32	50	50	28	21	33	41	50	41	50	40	46	39
3. *Other governmental agencies*	15	44	11	32	10	19	13	40	4	11	21	51	27	56	15	40
4. Property tax	308	174	264	109	287	135	368	203	342	196	229	125	188	112	282	162
5. Other local taxes	22	42	3	9	3	8	7	21	12	25	7	18	6	13	7	19
6. All other sources	18	17	17	37	8	8	16	10	18	20	11	12	8	12	14	19
Expenditures for:																
1. Transportation	10	15	7	6	12	10	28	15	41	22	16	12	35	22	22	20
2. Capital outlay	73	54	64	74	54	53	114	155	182	199	80	95	88	124	95	128
3. Debt service	49	33	48	24	47	29	90	37	96	38	52	31	53	38	63	38
4. Community services	4	6	2	4	1	2	3	8	0	0	4	15	2	7	2	7
5. Administration	13	6	16	7	15	6	26	8	25	9	18	11	18	6	19	9
6. Instruction	389	137	390	94	387	120	489	138	466	148	382	105	374	96	413	126
7. Attendance services	3	2	1	1	1	1	1	1	0	0	1	1	1	1	1	1
8. Health services	3	3	5	4	4	5	9	6	9	6	4	5	5	5	6	6
9. Fixed charges	38	52	30	43	33	44	73	59	71	54	32	46	38	43	46	51
10. Operation and maintenance	63	25	58	20	58	23	74	23	73	26	63	58	61	67	64	40
11. All other purposes	7	9	5	11	10	27	6	10	7	11	8	16	11	23	8	17
Total long term debt	416	281	556	247	532	345	996	445	1319	670	643	313	605	435	751	508
	N= 13		N= 34		N= 35		N= 35		N= 34		N= 35		N= 35		N= 221	

Category A = Major Urban Core City
Category B = Minor Urban Core City
Category C = Independent City
Category D = Established Suburb
Category E = Developing Suburb
Category F = Small City
Category G = Small Town or Agricultural Service Center

Mean revenue per pupil in ADM from state sources was highest in the established suburb category, followed by the developing suburb, small town, small city, independent city, minor urban core city, and major urban core city categories. The range was from $391 per pupil in the established suburb category to $216 per pupil in the major urban core city category. Mean revenue per pupil from local property taxes also was highest in the established suburb category, followed by the developing suburb, major urban core city, independent city, minor urban core city, small city, and small town categories. Mean revenue per pupil from federal sources assumed larger proportions than in 1961-62, with the major urban core city category receiving $63 per pupil, followed by the minor urban core city category; the independent city, small city, and small town categories (which each received $50 per pupil); the developing suburb category ($33 per pupil); and the established suburb category ($28 per pupil).

Expenditure for instruction was by far the largest single component of expenditures. The established suburb led with a mean expenditure of $489 per pupil in ADM and was followed by the developing suburb with $466 per pupil. However, the mean expenditure per pupil for instruction in the other five district categories was very similar—ranging only from $374 per pupil in the small town category to $390 per pupil in the minor urban core city category. The mean expenditures for administration also were quite consistent from category to category, although the two suburb categories again were considerably higher than the other five categories in mean expenditure for administration. The two suburb categories also were much higher in mean fixed charges per pupil, apparently reflecting the more generous fringe benefits provided employees in these two categories. The mean expenditure for transportation was highest in the developing suburb category, followed by the small town and established suburb categories. The mean expenditures per pupil for transportation in the four city categories were quite similar and were substantially lower than those in the suburban and small town categories. The mean expenditures for capital outlay and for debt service also were highest in the two suburb categories, with the mean expenditures in the other five categories considerably lower and within a rather narrow range.

Mean long term debt per pupil in average daily membership ranged from a high of $1,319 in the established suburb category to a low of $416 in the major urban core city category. The two suburb categories were considerably higher than the other five categories on this variable which, given the nature of school enrollment growth and school building construction in typical suburban areas, was not suprising.

Factor Analyses

The four factoring procedures described previously were applied to the combined data for all 221 school districts. The results obtained from the alpha and image procedures will be reported in detail, and comment will be made concerning the results obtained from the principal components and uniqueness rescaling procedures where these differed from the results obtained from the alpha and image procedures.

The determinant of the correlation matrix was .000033, which led to

rejection of the hypothesis that correlations of the variables in the population differed only randomly from zero when tested by Bartlett's test of sphericity.

Table 3.27 contains the solution provided by the alpha factor analysis procedure utilizing six revenue variables, eleven expenditure variables, and long term debt. Table 3.28 contains the solution provided by the image procedure applied to the same data. Examination of the rotated factor matrices provided by the principal components and the uniqueness rescaling procedures revealed results very similar to those yielded by the alpha and image solutions.

The relatively small percentage of the total variance accounted for in the alpha and image procedures (approximately 57 and 47 percent, respectively), and the estimates of communality reported in Table 3.27, indicate that many of the variables contained a high degree of uniqueness. Interpretation of the factors was difficult and must be viewed as tentative.

It was found that the same variables which loaded on Factor I in the alpha procedure (a compact solution) also loaded on Component I of the solution obtained using the image procedure (a dispersed solution). The variables

TABLE 3.27

ROTATED FACTOR MATRIX, ALPHA PROCEDURE, FOR SIX REVENUE VARIABLES, ELEVEN EXPENDITURE VARIABLES AND LONG TERM DEBT FOR THE TOTAL SAMPLE (221 DISTRICTS) FOR THE 1966-67 SCHOOL YEAR (DATA STANDARDIZED ON PER PUPIL IN AVERAGE DAILY MEMBERSHIP)

Variable	Factors						H_2
	I	II	III	IV	V	VI	
Revenue from							
1. State	.883	-.159	.165	.000	-.123	-.199	.843
2. Federal	-.036	-.621	-.084	.216	-.048	.480	.453
3. Other governmental agencies	-.091	-.075	-.067	.075	.642	-.104	.360
4. Property tax	.298	.695	.185	-.033	.129	.155	.819
5. Other local taxes	.105	.040	-.059	.516	.026	-.128	.233
6. All other sources	.110	.158	.178	.030	.269	.068	.161
Expenditures for:							
1. Transportation	.549	.116	.225	.081	-.070	-.346	.542
2. Capital outlay	.102	-.008	.739	-.163	.097	-.056	.350
3. Debt service	.447	.422	.539	.144	-.163	-.211	.692
4. Community services	-.007	-.004	-.039	-.030	-.016	.303	.107
5. Administration	.618	.093	.205	-.076	.079	.196	.490
6. Instruction	.812	.397	.070	.012	.238	.101	.895
7. Attendance services	-.013	.071	-.115	.491	-.142	.443	.282
8. Health services	.867	.155	.088	-.067	-.023	.002	.802
9. Fixed charges	.884	.268	.074	.126	.206	-.064	.910
10. Operation and maintenance	.320	.332	-.005	-.050	.484	-.034	.318
11. All other purpose	-.131	-.243	.025	.560	.133	.072	.341
Long term debt	.381	.320	.676	.015	-.130	-.253	.696
Factor variance	4.25	1.65	1.52	.95	.95	.90	
% of factor variance	41.5	16.2	14.9	10.4	9.3	8.8	
% of total variance=57.0							

TABLE 3.28

ROTATED COMPONENT MATRIX, IMAGE PROCEDURE, FOR SIX REVENUE VARIABLES, ELEVEN EXPENDITURE VARIABLES, AND LONG TERM DEBT FOR THE TOTAL SAMPLE (221 DISTRICTS) FOR THE 1966-67 SCHOOL YEAR (DATA STANDARDIZED ON PER PUPIL IN AVERAGE DAILY MEMBERSHIP)

Variable	Components I	II	III	IV	V	VI	VII	VIII	IX	X
Revenue from:										
1. State	.821	-.154	.220	.017	-.131	-.198	-.004	-.063	-.030	.000
2. Federal	-.048	-.440	-.204	.234	-.015	.278	-.018	.143	.007	-.005
3. Other governmental agencies	-.041	.023	-.101	.054	.499	-.040	.016	.010	.000	.000
4. Local property tax	.300	.775	.187	-.020	.101	.133	.069	.083	.000	-.003
5. Other local taxes	.095	.014	-.018	.369	.021	-.116	-.003	-.083	-.002	-.002
6. All other sources	.137	.122	.130	.020	.174	-.008	.205	-.004	.001	-.001
Expenditures for:										
1. Transportation	.502	.105	.348	.038	-.042	-.287	-.136	-.127	.047	-.005
2. Capital outlay	.114	.035	.509	-.113	-.008	-.076	.065	.030	.003	.000
3. Debt service	.404	.377	.548	.058	-.157	-.156	-.022	-.034	.017	-.002
4. Community services	-.022	-.001	-.060	.002	-.024	.248	-.004	.000	.000	.000
5. Administration	.593	.146	.221	-.038	.038	.152	-.004	.050	-.041	-.006
6. Instruction	.810	.424	.104	.026	.135	.046	.081	.053	.012	-.002
7. Attendance services	.031	.014	-.170	.351	-.116	.180	.138	.065	-.010	.009
8. Health services	.850	.107	.139	-.043	-.076	-.070	.099	-.035	-.024	.007
9. Fixed charges	.884	.264	.105	.077	.080	-.077	.103	.004	.017	.001
10. Operation and maintenance	.338	.286	.024	-.055	.286	-.063	.097	-.066	-.001	.001
11. All other purposes	-.138	-.126	.003	.448	.123	.075	-.061	.077	.011	-.002
Long term debt	.326	.266	.641	-.053	-.151	-.174	.006	-.064	-.022	.002
Factor variance	3.97	1.43	1.36	.55	.49	.43	.13	.08	.00	.00
% of factor variance	46.9	17.0	16.1	6.5	5.9	5.1	1.5	1.0	0.1	0.00
% of total variance=47.1										

associated with this factor were: (1) revenue from the state, and expenditures for (2) transportation, (3) debt service, (4) administration, (5) instruction, (6) health services, and (7) fixed charges. Factor I accounted for 41.5 percent of the factor variance in the alpha solution; Component I accounted for 46.9 percent of the factor variance in the image solution.

Two variables were associated with the second factor extracted by both the image and alpha procedures. This factor was bipolar. Revenue from federal sources was negatively correlated with the factor and revenue from property tax was postively correlated with it. Expenditure for debt service also was associated with the factor in the alpha procedure while in the image procedure, the third variable associated with Component II was expenditure for instruction. However, examination of the rotated factor matrix obtained from each procedure revealed that these two variables both were associated with the second factor at close to .40 in each solution. Factor II accounted for 16.2 percent of the factor variance in the alpha solution; Component II accounted for 17 percent of the variance in the image solution.

Factor III which accounted for about 15 percent of the factor variance in the alpha procedure, and Component III which accounted for about 16 percent of the factor variance in the image solution were virtually identical. The same three variables—expenditures for capital outlay and for debt service and long term debt—were associated with the factor. Also, Factor III was the only factor which could easily be interpreted.

Factor IV extracted by the alpha procedure was associated with revenue from other governmental agencies, and with expenditure for health services, and for all other purposes. Component IV extracted by the image procedure was associated with expenditure for all other purposes.

Factor V from the alpha solution was associated with revenue from other governmental agencies and with expenditure for operation and maintenance. Component V from the image solution was associated with revenue from other governmental agencies and was somewhat similar to Factor V.

Factor VI extracted by the alpha procedure was associated with revenue from federal sources and with expenditure for attendance services. The remaining five components extracted by the image procedure were not interpreted.

In summary, each factoring procedure extracted three relatively strong factors. One clearly was related to district indebtedness; the other two factors were not readily interpretable. The results of the factor analyses revealed that the eighteen variables possesed a high degree of uniqueness, i.e., they measured attributes which had little in common.

Analyses of Variance

Multivariate analyses of variance were performed on sources of revenue, purposes of expenditures, and measures of fiscal capacity. One-way analyses of variance were performed on property tax rate and on pupil-professional staff ratio.

Sources of Revenue

Table 3.29 shows the planned order of comparisons between district categories in the multivariate design employed in this study. The first

TABLE 3.29

PLANNED ORDER OF COMPARISONS BETWEEN DISTRICT CATEGORIES ON REVENUE DATA FOR 1966-67

Design Matrix	Category of District A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2				X	X		
Comparison 3						X	X
Comparison 4					X	X	
Comparison 5			X	X			
Comparison 6		X	X				

comparison planned was between Category A and Category B, the second comparison between Category D and Category E, the third between Category F and Category G, etc. The distribution theory of multivariate analysis permits only one rejection in a series of ordered hypotheses. Consequently, after examination of the means and standard deviations, it was decided to treat all comparisons after the first two as a single source of variation. This enabled examination of the contribution of the variables to rejection of the hypothesis, i.e., a post-hoc analysis of the sources of variation.

The results of the test of H_1 are shown in Table 3.30. The multivariate test of equality of mean vectors produced an F value of 1.192 with an associated probability of occurrence of .080. This led to acceptance of the null hypothesis, i.e., there is no difference between the major urban core city category and the minor urban core city category on revenue variables. Univariate and step-down F

TABLE 3.30

H_1: A=B (MAJOR URBAN CORE CITY VS. MINOR URBAN CORE CITY) REVENUE DATA FOR 1966-67

Multivariate F Ratio = 1.912; p = .080; df = 6 and 209

Source of Revenue	Mean Square	Univariate F*	p	Step-down F	p
1. State	.480	.197	.657	.197	.657
2. Federal	.072	.480	.489	.515	.474
3. Other governmental agencies	.013	.081	.776	.062	.803
4. Local property tax	1,797	.764	.383	1.434	.232
5. Other local taxes	.348	8.989	.003	9.233	.003
6. All other sources	.0006	.017	.896	.001	.975

*df = 1 and 214

ratios for each of the six variables also are reported in Table 3.30. However, acceptance of the null hypothesis foreclosed further comment.

There are presented in Table 3.31 the results of the test of H_2—no significant difference between the established suburb category and the developing suburb category on revenue variables. A multivariate F ratio of .594 was obtained with an associated probability of occurrence of .735. Again, the null hypothesis was accepted. Univariate and step-down F ratios for each variable also are presented, but acceptance of the null hypothesis foreclosed further interpretation.

TABLE 3.31

H_2: D=E (ESTABLISHED SUBURB VS. DEVELOPING SUBURB)
REVENUE DATA FOR 1966-67

Multivariate F Ratio = .594; p = .735; df = 6 and 209

Source of Revenue	Mean Square	Univariate F*	p	Step-down F	p
1. State	.486	.199	.656	.199	.655
2. Federal	.038	.254	.614	.281	.597
3. Other governmental agencies	.131	.842	.360	.945	.332
4. Local property tax	1.163	.495	.483	.264	.607
5. Other local taxes	.050	1.288	.258	1.380	.241
6. All other sources	.008	.199	.656	.504	.479

*df = 1 and 214

In Table 3.32 are presented the results of the analysis of H_3. This hypothesis tested for significant differences in all remaining sources of variation. A multivariate F value of 4.017 with an associated probability of occurrence of .0001 was obtained. Thus, the hypothesis was rejected. Examination of the univariate and step-down F ratios shown in Table 3.32 revealed that three

TABLE 3.32

H_3: B=C, C=D, E=F, F=G (ALL REMAINING SOURCES OF VARIATION)
REVENUE DATA FOR 1966-67

Multivariate F Ratio = 4.017; p = .0001; df = 24 and 734

Source of Revenue	Mean Square	Univariate F*	p	Step-down F	p
1. State	23.918	9.812	.0001	9.812	.0001
2. Federal	.569	3.772	.006	3.864	.0048
3. Other governmental agencies	.265	1.704	.150	1.827	.125
4. Local property tax	19.401	8.253	.0001	6.118	.0002
5. Other local taxes	.025	.643	.632	.657	.623
6. All other sources	.100	2.644	.035	2.026	.092

*df = 4 and 214

TABLE 3.33

DISCRIMINANT FUNCTION COEFFICIENTS FOR THE CANONICAL VARIATES INCLUDED WITHIN H_3, PERCENTAGE OF CANONICAL VARIATION ATTRIBUTABLE TO EACH COMPARISON, AND SIGNIFICANCE OF SUCCESSIVE COMPARISONS, REVENUE DATA FOR 1966-67

	Raw Coefficients				Standardized Coefficients			
Source of Revenue	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4
1. State	−.441	.396	.052	−.274	−.690	.619	.081	−.427
2. Federal	.924	−.828	.263	−2.223	.359	−.322	.102	−.863
3. Other governmental agencies	.341	1.334	.369	.343	.134	.526	.145	.135
4. Local property tax	−.299	−.426	−.243	−.131	−.459	−.653	−.372	−.200
5. Other local taxes	−.628	−.726	2.142	1.505	−.124	−.143	.422	.296
6. All other sources	−.529	−2.001	4.068	−.098	−.103	−.389	.792	−.019
% of canonical variation	60.40	33.27	5.48	.85				

Bartlett's test for significance of successive comparisons:

Roots 1-4 Chi Square = 91.94, df = 24, p = .0001
Roots 2-4 Chi Square = 37.84, df = 15, p = .001
Roots 3-4 Chi Square = 6.37, df = 8, p = .605
Root 4 Chi Square = .86, df = 3, p = .834

variables—revenue from state sources, from federal sources, and from local property tax—apparently were major contributors to rejection of the null hypothesis.

In Table 3.33 are displayed the discriminant function coefficients for the four canonical variates included within H_3. Bartlett's test for significance of successive comparisons indicated that roots 1-4 and 2-4 were significant at the .0001 and the .001 levels, respectively. The remaining roots were not significant. It should be noted that the first two canonical variates accounted for nearly 94 percent of the canonical variation, and that the last two canonical variates accounted for less than 7 percent of the canonical variation.

The data displayed in Table 3.33 indicated that revenue from the state discriminated best with regard to canonical variate 1. With regard to canonical variate 2, two variables—revenue from the state and revenue from local property tax—were the most potent discriminators. In canonical variate 3, revenue from all other sources was the best discriminator. In canonical variate 4, revenue from federal sources was the best discriminator.

By relaxing the restriction concerning the conduct of further analysis after rejection of a null hypothesis, it was possible to complete all planned comparisons. The results obtained when all planned comparisons were made are shown in Table 3.34. A multivariate F ratio significant at beyond the .0001 level was found in the comparison of the developing suburb and small city categories. Multivariate F ratios significant at beyond the .05 level were obtained in the comparisons involving the minor urban core city vs. independent city and the independent city vs. established suburb categories. The F ratios obtained in the other three comparisons were not significant.

TABLE 3.34

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS AND MULTIVARIATE F RATIOS FOR THE SIX PLANNED COMPARISONS ON REVENUE DATA FOR 1966-67

Source of Revenue	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
1. State	.217	−.766	−.835	.414	−.300	.817
2. Federal	−.340	.439	.381	−.154	.175	−.303
3. Other governmental agencies	−.009	−.293	−.299	.610	.482	.311
4. Local property tax	−.433	−.062	.203	.302	−.622	−.542
5. Other local taxes	−.906	−.266	−.216	−.618	−.275	−.151
6. All other sources	.010	.494	−.231	−.389	−.302	−.338
Multivariate F Ratio	1.912	2.644	2.726	.594	4.630	1.449
df	6&209	6&209	6&209	6&209	6&209	6&209
p	.080	.017	.014	.735	.0001	.197

The variable which discriminated most effectively between the major and minor urban core city categories was revenue from other local taxes. Revenue from the state was the most useful discriminator between the minor urban core city and independent city categories, between the independent city and established suburb categories, and between the small city and small town categories. Revenue from other governmental agencies and from other local taxes were the two variables which best discriminated between the established suburb and developing suburb categories, while revenue from local property tax best discriminated between the developing suburb and small city categories.

Purposes of Expenditure

Table 3.35 indicates the a priori planned order of comparisons between district categories on expenditure data for 1966-67. After examination of the descriptive statistics, it was decided that only one or two comparisons could be performed before a null hypothesis would be rejected. Thus, H_1 compared Category A and Category B; H_2 compared all remaining sources of variation.

TABLE 3.35

PLANNED ORDER OF COMPARISONS BETWEEN DISTRICT CATEGORIES ON EXPENDITURE DATA FOR 1966-67

Design Matrix	Category of District						
	A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2						X	X
Comparison 3					X	X	
Comparison 4				X	X		
Comparison 5			X	X			
Comparison 6		X	X				

The results of the test of H_1 are displayed in Table 3.36. The multivariate F ratio obtained was 1.681, with an associated probability of .073. Consequently, the null hypothesis was accepted. Univariate and step-down F ratios for each variable also are reported in Table 3.36. Although acceptance of the null hypothesis theoretically precludes further interpretation, it may be noted that only for attendance services was the step-down F ratio significant beyond the .01 level of confidence.

In Table 3.37 are displayed the results of the test of H_2, i.e., no significant difference in all remaining sources of variation. The multivariate F ratio obtained was 4.434, which was significant at the .0001 level. Consequently, the null hypothesis was rejected. Examination of the step-down F ratios displayed in Table 3.37 revealed that several variables contributed significantly to the

TABLE 3.36

H_1: A=B (MAJOR URBAN CORE CITY VS. MINOR URBAN CORE CITY)
EXPENDITURE DATA FOR 1966-67

Multivariate F Ratio = 1.681; p = .073; df = 12 and 203

Purpose of Expenditure	Mean Square	Univariate F*	p	Step-down F	p
1. Transportation	.010	.370	.544	.370	.544
2. Capital outlay	.071	.046	.830	.025	.875
3. Debt service	.0007	.006	.939	.080	.778
4. Community service	.006	1.004	.318	.869	.352
5. Administration	.009	1.248	.265	1.382	.241
6. Instruction	.002	.001	.971	.141	.708
7. Attendance services	.002	8.415	.004	8.729	.004
8. Health services	.003	.845	.359	1.334	.250
9. Fixed charges	.064	.262	.610	2.581	.110
10. Operation and maintenance	.026	.158	.692	.325	.569
11. All other purposes	.004	.134	.715	1.188	.277
Long term debt	18.552	1.037	.310	2.858	.092

*df = 1 and 214

variation. Those significant or beyond the .01 level included expenditure for transportation, for debt service, for administration, and for instruction, and long term debt per pupil in average daily membership.

The discriminant function coefficients for the canonical variates included within H_2 are displayed in Table 3.38. Bartlett's test for significance of

TABLE 3.37

H_2: B=C, C=D, D=E, E=F, F=G (ALL REMAINING SOURCES OF VARIATION)
EXPENDITURE DATA FOR 1966-67

Multivariate F Ratio = 4.434; p = .0001; df = 60 and 959

Purpose of Expenditure	Mean Square	Univariate F*	p	Step-down F	p
1. Transportation	.689	26.675	.0001	26.675	.0001
2. Capital outlay	7.566	4.935	.0003	2.628	.025
3. Debt service	1.794	15.834	.0001	7.988	.0001
4. Community services	.009	1.497	.192	1.296	.267
5. Administration	.091	12.293	.0001	4.296	.001
6. Instruction	8.626	5.983	.0001	5.455	.0001
7. Attendance services	.001	4.390	.0008	2.505	.032
8. Health services	.019	5.741	.0001	.102	.992
9. Fixed charges	1.456	6.002	.0001	.140	.983
10. Operation and maintenance	.184	1.117	.352	.146	.981
11. All other purposes	.020	.620	.685	1.056	.386
Long term debt	369.974	20.684	.0001	3.932	.002

*df = 5 and 214

TABLE 3.38

DISCRIMINANT FUNCTION COEFFICIENTS FOR THE CANONICAL VARIATES INCLUDED WITHIN H_2, PERCENTAGE OF CANONICAL VARIATION ATTRIBUTABLE TO EACH COMPARISON, AND SIGNIFICANCE OF SUCCESSIVE COMPARISONS, EXPENDITURE DATA FOR 1966-67

	Raw Coefficients					Standardized Coefficients				
Purpose of Expenditure	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5
1. Transportation	−4.408	−5.753	.144	1.817	−.306	−.708	−.925	.023	.292	−.049
2. Capital outlay	−.044	−.154	−.140	.112	.325	−.054	−.191	−.173	.139	−.402
3. Debt service	−.259	1.408	1.431	1.964	.510	−.087	.474	.482	.661	.172
4. Community services	.103	1.227	7.435	−3.781	−4.864	.008	.097	.585	−.297	−.383
5. Administration	−6.820	1.536	6.729	.536	−3.351	−.588	.132	.580	.046	−.289
6. Instruction	.470	.414	−.356	.177	.524	.565	.498	−.428	.213	.629
7. Attendance services	18.680	−15.403	−14.409	47.762	−40.088	.273	−.225	−.210	.697	−.585
8. Health services	.955	−2.778	−3.179	.553	6.851	.055	−.160	−.183	.032	.394
9. Fixed charges	−.193	.280	.583	−.252	−.460	−.095	.138	.287	−.124	−.227
10. Operation and maintenance	−.138	−.175	.314	−.089	−.505	−.056	−.071	.127	−.036	−.205
11. All other purposes	−1.003	−.465	−.061	−2.146	2.916	−.179	−.083	−.011	−.383	.520
Long term debt	−.074	.112	−.173	−.177	−.067	−.313	.475	−.731	−.749	−.283
% of canonical variation	69.22	22.26	4.08	2.81	1.63					

Bartlett's test for Significance of successive comparisons:

Roots 1-5 Chi Square = 241.91, df = 60, p = .0001
Roots 2-5 Chi Square = 89.04, df = 44, p = .0001
Roots 3-5 Chi Square = 26.97, df = 30, p = .625
Roots 4-5 Chi Square = 14.13, df = 18, p = .721
Root 5 Chi Square = 5.21, df = 8, p = .735

successive comparisons indicated that roots 1-5 and 2-5 both were significant at beyond the .0001 level, and that the remaining three roots were not significant. The first two canonical variates accounted for over 91 percent of the canonical variation.

The data displayed in Table 3.38 indicated that no single variable was consistently an effective discriminator with regard to the five canonical variates. The most potent discriminator with regard to canonical variates 1 and 2 was expenditure for transportation. The most potent discriminator with regard to canonical variates 3 and 4 was long term debt; with regard to canonical variate 5 the most potent discriminator was expenditure for instruction.

The restriction against further analysis after rejection of a null hypothesis was then relaxed to permit completion of all planned comparisons and the results obtained are displayed in Table 3.39. Multivariate F ratios significant at beyond the .0001 level were found in the comparisons involving the minor urban core city and independent city categories, the independent city and established suburb categories, and the developing suburb and small city categories. A multivariate F ratio significant at beyond the .001 level was obtained from the comparison of the small city category with the small town category. In the comparison of the established suburb category with the developing suburb category, a multivariate F ratio significant at beyond the .01 level was found.

With regard to the comparison of the major and minor urban core city categories, expenditure for fixed charges was found to be the variable which best discriminated between them. Expenditure for transportation was the most useful discriminator in the comparisons involving the minor urban core city vs. independent city and the small city vs. small town categories. Three variables–

TABLE 3.39

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS AND MULTIVARIATE F RATIOS FOR THE PLANNED COMPARISONS, EXPENDITURE DATA FOR 1966-67

Purpose of Expenditure	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
1. Transportation	−.303	−.891	−.733	−.727	.187	−1.175
2. Capital outlay	−.262	−.058	−.111	−.240	.022	−.205
3. Debt service	−.148	−.024	−.164	.768	.159	.142
4. Community service	−.208	−.078	−.153	.119	−.141	.268
5. Administration	.174	−.532	−.725	.287	.388	−.125
6. Instruction	.475	.766	.739	.449	−.128	.510
7. Attendance services	−.758	.240	.146	−.182	−.243	−.241
8. Health services	.873	.228	.156	−.135	−.068	−.160
9. Fixed charges	−1.052	−.372	−.176	.145	.055	.148
10. Operation and maintenance	−.135	−.094	−.112	−.065	−.021	−.042
11. All other purposes	.281	−.262	−.048	−.098	.096	−.076
Long term debt	.441	−.136	−.171	.009	−.675	.418
Multivariate F ratio	1.681	5.271	5.799	2.793	6.308	3.364
df	12 & 203	12 & 203	12 & 203	12 & 203	12 & 203	12 & 203
p	.073	.0001	.0001	.002	.0001	.0002

TABLE 3.40

MEANS AND STANDARD DEVIATIONS OF FIVE VARIABLES MEASURING FISCAL CAPACITY OF SCHOOL DISTRICTS, BY CATEGORIES, FOR THE 1966-67 SCHOOL YEAR

Variable	Category A		Category B		Category C		Category D		Category E		Category F		Category G	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Property value/ pupil in ADM	$32,946	$9,020	$28,077	$13,184	$27,497	$6,568	$30,691	$16,422	$29,967	$17,786	$27,228	$10,225	$26,308	$22,951
Retail sales/ capita	1,828	306	1,962	708	2,093	453	1,679	509	1,455	307	2,243	886	1,509	548
Retail sales/ household	5,651	665	7,263	6,891	6,680	1,269	5,863	1,772	5,272	1,017	7,293	2,428	5,116	1,575
Effective buying income/ capita	2,653	407	2,447	562	2,614	287	2,884	706	2,746	670	2,419	339	2,026	363
Effective buying income/ household	8,223	1,035	8,128	1,204	8,379	936	9,997	2,175	9,913	2,168	8,039	1,245	6,940	1,293
Number in sample	13		34		35		35		34		35		35	

Category A = Major Urban Core City
Category B = Minor Urban Core City
Category C = Independent City
Category D = Established Suburb
Category E = Developing Suburb
Category F = Small City
Category G = Small town

expenditure for transportation, for administration, and for instruction— were of nearly equal value in discriminating between the independent city and established suburb categories. Expenditure for debt service best discriminated between the established and developing suburb categories. In the remaining comparison, developing suburb vs. small city, long term debt was the most potent discriminator.

Fiscal Capacity

Three measures of fiscal capacity were employed. Property value per pupil in average daily membership was obtained by dividing the total market value of property in the school district in 1966-67 by the total average daily membership in the district. Estimates of retail sales and effective buying income for the municipality with which the school district was most closely associated were obtained from *Sales Management's* "Survey of Buying Power" and were expressed on both a per capita and a per household basis.

The means and standard deviations of each of the five variables employed as measures of fiscal capacity are displayed in Table 3.40. The mean property value per pupil in ADM was highest in the major urban core city category and lowest in the small town category. However, the range was relatively small—from $26,308 to $32,946. Mean retail sales per capita ranged from a high of $2,243 in the small city category to a low of $1,455 in the developing suburb category. Mean retail sales per household were highest in the small city category and lowest in the small town category. They ranged from $5,116 per household to $7,293 per household. Effective buying income per capita was highest in the established suburb category ($2,884) and lowest in the small town category ($2,026). Effective buying income per household also was highest in the established suburb category ($9,997) and lowest in the small town category ($6,940).

The matrix of correlations between the variables used as measures of fiscal capacity is shown in Table 3.41. Property value per pupil was virtually uncorrelated with the other four variables. The correlation between retail sales per capita and retail sales per household was .728, and the correlation between effective buying income per capita and effective buying income per household

TABLE 3.41

MATRIX OF CORRELATIONS OF VARIABLES MEASURING FISCAL CAPACITY OF SCHOOL DISTRICTS, 1966-67 SCHOOL YEAR

Variable	1	2	3	4	5
1) Property value/pupil	1.000				
2) Retail sales/capita	—.020	1.000			
3) Retail sales/household	—.022	.728	1.000		
4) Effective buying income/ capita	—.001	.242	—.057	1.000	
5) Effective buying income/ household	.001	.145	.136	.857	1.000

*With N=221, a correlation of .253 is significant at the .01 level

was .857. Correlations between the two measures of retail sales and the two measures of effective buying income were surprisingly low, ranging from .242 between retail sales per capita and effective buying income per capita to -.057 between retail sales per household and effective buying income per capita.

The planned order of comparisons between district categories in the multivariate analysis of variance is shown in Table 3.42. Examination of the means and standard deviations indicated that rejection of a null hypothesis was likely to occur before all planned comparisons had been completed. Consequently, H_1 tested for differences between Categories A and B; H_2 tested for differences in all remaining sources of variation.

TABLE 3.42

PLANNED ORDER OF COMPARISONS BETWEEN DISTRICT CATEGORIES ON FISCAL CAPACITY DATA FOR 1966-67

Design Matrix	Category of District						
	A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2						X	X
Comparison 3					X	X	
Comparison 4				X	X		
Comparison 5			X	X			
Comparison 6		X	X				

In Table 3.43 are displayed the results of the test of H_1, i.e., no significant difference between the major urban core city and the minor urban core city categories. A multivariate F ratio of 3.081 with an associated probability of occurrence of .011 was obtained. Consequently, the null hypothesis was accepted. The step-down F ratios for the variables shown in Table 3.43 indicated that only on effective buying income per household did significant variation occur.

The results of the test of H_2, i.e., no significant difference in all remaining sources of variation, are shown in Table 3.44. The F ratio obtained for the multivariate test of the equality of mean vectors was 7.177, which was significant at the .0001 level. The null hypothesis was rejected. Examination of the step-down F ratios indicated that retail sales per capita, effective buying income per capita, and effective buying income per household all contributed to the variation at the .0001 level of significance. Despite the fact that it was the first variable entered, property value per pupil in ADM did not contribute significantly to the variation, nor did retail sales per household.

TABLE 3.43

H_1: A=B (MAJOR URBAN CORE CITY VS. MINOR URBAN CORE CITY)
FISCAL CAPACITY DATA FOR 1966-67

Multivariate F Ratio = 3.081; p = .011; df = 5 and 210

Variable	Mean Square	Univariate F*	p	Step-down F	p
Property value/ pupil in ADM	265,497,700.000	1.154	.284	1.154	.284
Retail sales/ capita	174.667	.001	.982	.002	.965
Retail sales/ household	4,361,534.000	.455	.501	.977	.324
Effective buying income/capita	211,339.920	.817	.367	.365	.546
Effective buying income/household	1,406,411.400	.583	.446	12.779	.001

*df = 1 and 214

TABLE 3.44

H_2: B=C, C=D, D=E, E=F, F=G (ALL REMAINING SOURCES OF VARIATION)
FISCAL CAPACITY DATA FOR 1966-67

Multivariate F Ratio = 7.177; p = .0001; df = 25 and 782

Variable	Mean Square	Univariate F*	p	Step-down F	p
Property value/ pupil in ADM	104.012	.454	.810	.454	.810
Retail sales/ capita	33,116.680	8.516	.0001	8.407	.0001
Retail sales/ household	237,824.020	2.294	.047	1.396	.227
Effective buying income/capita	3,293,381.900	12.762	.0001	16.502	.0001
Effective buying income/household	49,298,259.000	20.460	.0001	10.050	.0001

*df = 5 and 214

TABLE 3.45

DISCRIMINANT FUNCTION COEFFICIENTS FOR THE CANONICAL VARIATES INCLUDED WITHIN H_2, PERCENTAGE OF CANONICAL VARIATION ATTRIBUTABLE TO EACH COMPARISON, AND SIGNIFICANCE OF SUCCESSIVE COMPARISONS, FISCAL CAPACITY DATA FOR 1966-67

	Raw Coefficients					Standardized Coefficients				
Variable	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5
Property value/ pupil in ADM	−.009	−.006	−.004	.029	.058	−.132	−.089	−.063	.443	.886
Retail sales/capita	.002	−.002	.035	−.005	.006	.155	−.120	2.156	−.302	.371
Retail sales/ household	.001	−.002	−.006	.003	−.002	.305	−.496	−1.908	.992	−.610
Effective buying income/capita	.002	−.003	−.005	−.001	−.0002	.805	−1.489	−2.450	−.488	−.122
Effective buying income/household	−.001	−.001	.001	.0002	−.000	−1.582	.823	2.121	.343	−.008
% of canonical variation	66.58	21.04	11.69	0.67	0.01					

Bartlett's test for significance of successive comparisons:

Roots 1-5 Chi Square = 163.89, df = 25, p = .0001
Roots 2-5 Chi Square = 61.32, df = 16, p = .0001
Roots 3-5 Chi Square = 23.30, df = 9, p = .006
Roots 4-5 Chi Square = 1.35, df = 4, p = .853
Root 5 Chi Square = 0.02, df = 1, p = .894

In Table 3.45 are displayed the discriminant function coefficients for the canonical variates included within H_2. Application of Bartlett's test for significance of successive comparisons revealed that roots 1-5 and 2-5 were significant at beyond the .0001 level, that roots 3-5 were significant at beyond the .001 level, and that roots 4-5 and 5 were not significant. The first two canonical variates accounted for nearly 88 percent of the canonical variation; the last two variates accounted for less than 1 percent of the canonical variation.

The data displayed in Table 3.45 indicated that effective buying income per household was the variable which best discriminated with regard to canonical variate 1. Effective buying income per capita was the variable most useful in discriminating with regard to canonical variates 2 and 3. Retail sales per household was the best single discriminator with regard to canonical variate 4. Property value per pupil in ADM was the most potent discriminator with regard to canonical variate 5.

The restriction with regard to further analysis after rejection of a null hypothesis was then relaxed and all planned comparisons were made. In Table 3.46 are displayed the results of these comparisons. Multivariate F ratios significant at beyond the .0001 level were found in the comparisons of established suburb vs. developing suburb, developing suburb vs. small city, and small city vs. small town categories. A multivariate F ratio significant at beyond the .001 level was found when the independent city category was compared with the established suburb category. When the minor urban core city and

TABLE 3.46

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS AND MULTIVARIATE F RATIOS FOR THE PLANNED COMPARISONS, FISCAL CAPACITY DATA FOR 1966-67

Variable	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
Property value/ pupil in ADM	−.279	.000	−.055	−.160	−.101	−.053
Retail sales/ capita	1.155	1.091	.069	.530	.390	−1.392
Retail sales/ household	−1.186	−1.740	.578	−.336	.083	.685
Effective buying income/capita	−2.787	−2.162	1.839	−.515	.502	.632
Effective buying income/household	2.578	2.361	−1.893	−.535	−1.328	−.928
Multivariate F ratio	3.081	3.417	4.971	7.002	15.903	7.052
df	5&210	5&210	5&210	5&210	5&210	5&210
p	.011	.006	.0003	.0001	.0001	.0001

independent city categories were compared, a multivariate F ratio significant at beyond the .01 level was obtained.

The two measures of effective buying income were the variables which were most useful in discriminating between the major and minor urban core city categories, the minor urban core city and independent city categories, and the independent city and established suburb categories. Three variables—retail sales per capita, effective buying income per capita, and effective buying income per household were of nearly equal value in discriminating between the established suburb and developing suburb categories. Effective buying income per household best discriminated between the developing suburb and the small city categories, and retail sales per capita was the variable which was most useful in discriminating the small city category from the small town category.

Property Tax Rates

The local property tax rate was computed for each school district by dividing the school district's revenue from property taxes during the 1966-67 school year by the market value of property in the district. The mean and standard deviation of the property tax rates for each of the seven categories of school districts is reported in Table 3.47. The mean property tax rate for the total sample of districts was 11.479 mills. Mean property tax rates ranged from a low of 8.971 mills in the major urban core city category to a high of 13.892 mills in the developing suburb category. The mean property tax rate in each of the two suburb categories was over two mills higher than the mean property tax rate in any of the other five categories.

TABLE 3.47

PROPERTY TAX RATE IN MILLS FOR THE SEVEN SCHOOL DISTRICT CATEGORIES, 1966-67 SCHOOL YEAR

Category	N	Mean	Variance	S.D.
Major urban core city	13	8.971	.112	3.344
Minor urban core city	35	11,596	.863	9.289
Independent city	35	10.910	.234	4.841
Established suburb	35	13.604	.379	6.156
Developing suburb	34	13.892	.841	9.173
Small city	35	9.890	.522	7.227
Small town	35	9.984	.648	8.051
Grand Mean =	222	11.479		

The results of a one-way analysis of variance of property tax rates are shown in Table 3.48. The F ratio obtained, 1.854, was significant at the .09 level of confidence. Thus, variance as great as observed in this sample would be expected to occur by chance only nine times in one hundred.

Pupil-Professional Staff Ratio

The ratio of pupils to professional staff members in each district was

TABLE 3.48

ANALYSIS OF VARIANCE, PROPERTY TAX RATES FOR SEVEN SCHOOL DISTRICT CATEGORIES, 1966-67 SCHOOL YEAR

Source	Sum of Squares	Mean Square	df	F	P
Between groups	.062	.010	6	1.854	.090
Within groups	1.191	.006	215		
Corrected total	1.253		221		
Correction of mean	2.926	2.925	1		
Uncorrected total	4.179		222		

computed by dividing the district's average daily membership for the 1966-67 school year by the number of full-time equivalent professional staff members reported by the district for that year. The mean and standard deviation of the pupil-professional staff ratio for each of the seven school district categories is shown in Table 3.49. The mean pupil-professional staff ratio for the total sample of districts was 20.15:1. The means ranged from a low of 18.74:1 in the established suburb category to a high of 21.87:1 in the major urban core city category.

TABLE 3.49

PUPILS IN AVERAGE DAILY MEMBERSHIP PER FULL TIME EQUIVALENT PROFESSIONAL STAFF MEMBER, 1966-67 SCHOOL YEAR

Category	N	Mean	Variance	S.D.
Major urban core city	13	21.87	4.17	2.043
Minor urban core city	35	20.33	3.43	1.852
Independent city	35	20.62	6.25	2.500
Established suburb	35	18.74	3.82	1.955
Developing suburb	34	19.29	5.64	2.374
Small city	35	21.27	47.95	6.925
Small town	35	19.98	3.75	1.937
Grand Mean =	222	20.15		

The results of a one-way analysis of variance of pupil-professional staff ratios are shown in Table 3.50. The F value obtained was 2.730 and was significant at the .014 level. There is good reason to believe that differences in pupil-professional staff ratio as great as those observed are not likely to arise by chance.

TABLE 3.50

ANALYSIS OF VARIANCE, PUPILS IN AVERAGE DAILY MEMBERSHIP
1966-67 SCHOOL YEAR

Source	Sum of Squares	Mean Square	df	F	P
Between groups	186.865	31.144	6	2.730	.014
Within groups	2452.881	11.409	215		
Corrected total	2639.746		221		
Correction for mean	90130.208	90130.208	1		
Uncorrected total	92769.954		222		

Changes from 1961-62 to 1966-67

In this section comment will be made with regard to similarities and differences in the results obtained from the analyses of data for the 1961-62 and 1966-67 school years. Attention will be given to mean revenues and expenditures, the results of the factor analyses, the results of the multivariate analyses of variance, and the results of the one-way analyses of variance.

Mean Revenue and Expenditure

Between 1962 and 1967, revenue from the state displaced revenue from the local property tax as the largest source of revenue for the total sample of school districts. The increase in revenue from the state was from $208 to $301 per pupil—an increase of 45 percent. Small towns and suburbs fared best in mean revenue per pupil from state sources. The small town category received the largest amount of revenue per pupil from state sources in 1962; the two suburb categories received the largest amount per pupil in 1967. In both years, mean revenue per pupil from state sources received in the large urban core city category was only about one-half the mean revenue per pupil received in the two suburb categories.

The local property tax, which ranked first as a source of revenue in 1961-62, ranked second as a source of revenue in 1966-67. Mean revenue from the local property tax increased from $215 per pupil to $282 per pupil, an increase of 31 percent. In both 1961-62 and 1966-67 mean revenue per pupil from the local property tax was highest in the two suburb categories and also was high in the major urban core city category.

Revenue per pupil from federal sources moved from fifth ranking in 1961-62 to third ranking in 1966-67, increasing from $9 per pupil to $46 per pupil—an increase of over 400 percent. Mean revenue per pupil from federal sources increased seven-fold in both the large urban core city category and the small town category and increased four-fold or more in the two suburb categories.

Revenue from other local sources ranked third in each of the two years and increased from a mean of $12 per pupil in 1961-62 to a mean of $15 per pupil in

1966-67. Revenue from other local taxes ranked sixth in each of the two years and increased from a mean of $5 per pupil in 1961-62 to a mean of $7 per pupil in 1966-67. Revenue from other local sources, which ranked third in 1961-62, ranked fifth in 1966-67. The increase was from a mean of $13 to a mean of $14 per pupil.

There were virtually no changes between 1961-62 and 1966-67 in the ranking of expenditure categories for the total sample of districts. The only changes involved debt service—which ranked third in 1961-62 and fourth in 1966-67—and operation and maintenance—which ranked fourth in 1961-62 and third in 1966-67.

Expenditure per pupil for instruction was the largest component of expenditures and increased from a mean of $307 per pupil to a mean of $413 per pupil, an increase of 35 percent. Mean expenditure per pupil for instruction was highest in the two suburb categories in each of the two years; the mean expenditure per pupil for instruction in the other five categories was remarkably similar in each of the two years.

Expenditure for capital outlay ranked second in importance each year and increased from a mean of $84 per pupil in 1961-62 to a mean of $95 per pupil in 1966-67, an increase of 13 percent. The mean expenditure per pupil for capital outlay was much higher in the developing suburb category than it was in the other six categories in both 1961-62 and 1966-67.

The mean expenditure per pupil for debt service increased from $54 in 1961-62 to $63 in 1966-67, an increase of about 16 percent. The mean expenditure per pupil for debt service was substantially higher in the two suburb categories than it was in the other five categories in 1966-67.

Of the other major expenditure categories, mean expenditure per pupil for operation and maintenance increased from $48 to $64 (33 percent); mean expenditure per pupil for fixed charges increased from $29 to $46 (59 percent); mean expenditure per pupil for transportation increased from $15 to $22 (47 percent); mean expenditure per pupil for administration increased from $12 to $19 (58 percent); and mean expenditure per pupil for all other purposes increased from $5 to $8 (60 percent).

Long term debt per pupil in average daily membership for the entire sample increased from a mean of $643 in 1961-62 to a mean of $751 in 1966-67, an increase of 17 percent over this period. The mean long term debt per pupil was much higher in the two suburb categories than in the other five categories in both years and was lowest in the major urban core city category in both years.

Factor Analyses

The factor matrices obtained when the alpha factor analysis procedure was applied to the data for 1961-62 and to the data for 1966-67 were very similar, particularly with regard to the first three factors extracted—which accounted for by far the largest portion of the factor variance. Factor I extracted from the 1966-67 data was very similar to Factor I extracted from the 1961-62 data with the exception that a larger number of variables loaded on the factor in 1966-67. However, the three variables which loaded most heavily on the factor in 1961-62 (revenue from the state and expenditure for health services and fixed charges) also loaded most heavily on Factor I in 1966-67.

The variable which loaded most heavily on Factor II in 1961-62 (revenue from local property tax) also loaded most heavily on the factor in 1966-67. However, the variables which ranked second and third in 1961-62 differed from those which ranked second and third in 1966-67. Factor III was virtually identical in both years. It was associated with expenditure for capital outlay and for debt service, and with long term debt.

The factor matrices provided by the image factoring procedure applied to data for 1966-67 also were comparable to those obtained from data for 1961-62. However, the solution obtained from 1966-67 data accounted for 47 percent of the total variance compared to 35.5 percent of the total variance accounted for by the solution obtained from data for 1961-62. Component I obtained when the image procedure was applied to 1966-67 data was very similar to Component I obtained from the data for 1961-62, although more variables loaded on the component in 1966-67. The variables which loaded on Component I in both years were revenue from the state and expenditure for transportation, for health services, and for fixed charges. Component I accounted for 31.7 percent of the factor variance in 1961-62 and 46.9 percent of the factor variance in 1966-67.

Revenue from local property tax, which loaded most heavily on Component II in 1961-62, also loaded most heavily on the second component extracted in 1966-67. However, the other variables which loaded on the component in 1966-67 were entirely different than those which loaded on the component in 1961-62.

Component III extracted from 1966-67 data was virtually identical to Component III extracted from 1961-62 data. The third component was associated with long term debt, expenditure for capital outlay, and expenditure for debt service.

The remaining components extracted from 1966-67 data differed from those extracted from 1961-62 data. However, the first three components, which accounted for about 80 percent of the factor variance, were very similar in each of the two years.

Analyses of Variance

With regard to revenue data, no significant difference was found between the major and minor urban core city categories in either 1961-62 or 1966-67. Also, no significant difference was found between the established suburb and developing suburb categories in either 1961-62 or 1966-67. A statistically significant difference was found in both years when the remaining categories were combined. Statistically significant differences existed on revenue from the state and on revenue from local property taxes in 1961-62, and on these two variables as well as revenue from federal sources in 1966-67. With regard to canonical variate 1, revenue from state sources was the best discriminator in both 1961-62 and 1966-67. Revenue from local property tax best discriminated with regard to canonical variate 2 in both years. Revenue from all other sources best discriminated with regard to canonical variate 3 in both years. Revenue from all other sources best discriminated with regard to canonical variate 4 in 1961-62, but revenue from federal sources was the best discriminator in 1966-67.

When all of the planned comparisons were made, it was found that a difference statistically significant at beyond the .05 level existed between the minor urban core city and independent city categories, and between the independent city and established suburb categories, in both 1961-62 and 1966-67. A difference statistically significant at beyond the .01 level in 1961-62, and at beyond the .0001 level in 1966-67, was found when the established suburb and the small city categories were compared. No significant difference between the small city and small town categories was found in either year.

With regard to expenditures, no statistically significant difference between the major urban core city and minor urban core city categories was found for either 1961-62 or 1966-67. A statistically significant difference was found in both years when the remaining categories were combined. Expenditure for transportation and long term debt were major contributors to the variance in 1961-62. In 1966-67, expenditure for transportation, for debt service, and for instruction were major contributors. The variable which best discriminated with regard to canonical variate 1 was expenditure for transportation in both 1961-62 and 1966-67. Long term debt was the variable which best discriminated with regard to canonical variate 2 in 1961-62; in 1966-67, expenditure for transportation was the most useful. Expenditure for all other purposes was the variable which best discriminated with regard to canonical variate 3 in 1961-62; and in 1966-67 long term debt was the most effective discriminator. Expenditure for health services and expenditure for capital outlay were the two variables which best discriminated with regard to canonical variate 4 in 1961-62, while in 1966-67 the variable which best discriminated with regard to this variate was long term debt. In 1961-62 the variable which best discriminated with regard to canonical variate 5 was expenditure for attendance services, and in 1966-67 expenditure for instruction was the most useful.

When all planned comparisons were carried out, differences statistically significant at beyond the .0001 level were found between all remaining categories in 1961-62. In 1966-67, differences statistically significant at beyond the .0001 level were found for the comparisons involving the minor urban core city vs. independent city, the independent city vs. established suburb, and the developing suburb vs. small city categories; a difference statistically significant at beyond the .001 level was found between the small city and small town categories; and a difference statistically significant at beyond the .01 level was found between the established suburb and developing suburb categories.

The variable which best discriminated between the major and minor urban core city categories in 1961-62 was expenditure for operation and maintenance; in 1966-67 it was expenditure for fixed charges. Expenditure for transportation was the variable most useful in discriminating between the minor urban core city and independent city categories, and between the small city and small town categories, in both 1961-62 and 1966-67. In 1961-62, expenditure for transportation was the most potent discriminator between the independent city and established suburb categories while in 1966-67, three variables—expenditure for transportation, for administration, and for instruction—were about equally useful in this regard. Long term debt was the best discriminator between the established and developing suburb categories in 1961-62; in 1966-67, expenditure for debt service was the most potent. Long term debt was the variable

which best discriminated between the developing suburb and small city categories in both 1961-62 and 1966-67.

Fiscal Capacity

The large urban core city category had the highest mean value of property per pupil in ADM in both 1961-62 and 1966-67, and the value increased from $30,999 per pupil in 1961-62 to $32,946 per pupil in 1966-67. The small town category had the lowest mean value of property per pupil in ADM in both years and showed a gain from $21,648 per pupil in 1961-62 to $26,308 per pupil in 1966-67. The established suburb category ranked second in property value per pupil in ADM both years, and the developing suburb category ranked third in each of the two years.

In retail sales per capita, the small city category ranked first in both 1961-62 and 1966-67 and was followed by the independent city category, the minor urban core city category, and the major urban core city category in each of the two years. Retail sales per capita were lowest in the two suburb categories and in the small town category in both 1961-62 and 1966-67.

In effective buying income per capita, the rankings were practically identical in each of the two years. The two suburb categories ranked either first or second, the major urban core city category ranked third, and the small town category ranked last.

The correlations between the variables used as measures of fiscal capacity indicated that property value per pupil was, for practical purposes, uncorrelated with either retail sales per capita or effective buying income per capita. The correlation between retail sales per household and retail sales per capita was .640 in 1961-62 and .728 in 1966-67. The correlation between retail sales per capita and effective buying income per household was .622 in 1961-62 and .242 in 1966-67. The correlation between effective buying income per household and effective buying income per capita was .958 in 1961-62 and .857 in 1966-67.

No significant difference in the fiscal capacity of the major and minor urban core city categories was found in either the 1961-62 or 1966-67 school years. A significant difference was found for both 1961-62 and 1966-67 when the remaining categories were combined. Effective buying income per capita was a major contributor to the variance in 1961-62; retail sales per capita, effective buying income per capita, and effective buying income per household all contributed significantly to the variance in 1966-67. Retail sales per capita was the variable which best discriminated with regard to canonical variate 1 in 1961-62; in 1966-67, the variable which best discriminated was effective buying income per household. Effective buying income per capita was the variable which was most useful in discriminating with regard to canonical variate 2 in both 1961-62 and 1966-67. In 1961-62, effective buying income per household best discriminated with regard to canonical variate 3; in 1966-67, effective buying income per capita was the most useful discriminator.

Retail sales per household best discriminated with regard to canonical variate 4 in both 1961-62 and 1966-67. Effective buying income per capita was the variable which best discriminated with regard to canonical variate 5 in 1961-62; property value per pupil in ADM was the most potent discriminator in 1966-67.

When all planned comparisons between categories were made, a difference in

fiscal capacity significant at beyond the .0001 level was found between the developing suburb and small city categories in both 1961-62 and 1966-67. The difference between the established and developing suburb categories was significant at beyond the .01 level in 1961-62, and at beyond the .0001 level in 1966-67. The difference between the small city and small town categories was significant at beyond the .05 level in 1961-62, and beyond the .0001 level in 1966-67. The difference between the independent city and established suburb categories, which was significant at beyond the .05 level in 1961-62, was significant at beyond the .001 level in 1966-67. In the remaining comparison— minor urban core city vs. independent city— the difference in 1961-62 was not significant but was significant at beyond the .01 level in 1966-67. The differences between the categories clearly had increased between 1961-62 and 1966-67.

Effective buying income per capita was the variable which most effectively discriminated between the major and minor urban core cities in both 1961-62 and 1966-67. The variable which most effectively discriminated between the minor urban core city and independent city categories, and between the independent city and established suburb categories, in both 1961-62 and 1966-67 was effective buying income per household. Retail sales per capita and effective buying income per capita were of nearly equal value in discriminating between the established and developing suburb categories in 1961-62. These two variables and effective buying income per household were most useful in discriminating between the established and developing suburb categories in 1966-67. Retail sales per capita was the variable which was most effective in discriminating between the developing suburb category and the small city category in 1961-62; effective buying income per household was most effective in 1966-67. In the comparison of the small city and small town categories, effective buying income per capita was the most effective discriminator in 1961-62 and retail sales per capita was the most effective discriminator in 1966-67.

The mean property tax rate for school purposes for the total sample of districts was 10.26 mills in 1961-62 and 11.48 mills in 1966-67. The mean property tax rate was highest in the developing suburb category followed closely by the established suburb category in each of the two years, and was lowest in the major urban core city category in each of the two years. A one-way analysis of variance revealed no statistically significant differences in tax rates among the various categories in either 1961-62 or 1966-67.

In 1961-62, the ratio of pupils to professional staff members for the total sample was 22.95:1. In 1966-67, this ratio was 20.15:1. The ratio of pupils to professional staff members was lowest in the two suburb categories during each of the two years and was highest in the major urban core city category in each of the two years. A one-way analysis of variance revealed no statistically significant differences with regard to the ratio of pupils per professional staff member in 1961-62. However, a one-way analysis of variance applied to the data for 1966-67 revealed that the difference in the ratio of pupils per professional staff member was significant at the .014 level.

CHAPTER IV

ANALYSES OF DATA: MUNICIPALITIES

In this chapter are reported the results of the analyses of data concerning the revenues, expenditures, and long term debt of the municipality which was identified as being most closely associated with each school district in the sample. The municipalities were categorized in the same manner as the school districts with which they were associated. Thus, Category A consists of major urban core cities, Category B of minor urban core cities, Category C of independent cities, Category D of established suburbs, Category E of developing suburbs, Category F of small cities, and Category G consists of small towns. As described in Chapter II, data concerning the revenues, expenditures, and long term debt of these municipalities were obtained from the *1962 Census of Governments* and the *1967 Census of Governments*. The data were standardized on a per capita basis using population estimates obtained from *Sales Management's* "Survey of Buying Power".

All sources of revenue reported for municipalities in the *Census of Governments* were included in the analysis. Expenditures for nearly all purposes reported for municipalities in the *Census of Governments* also were included. Although the expenditure for education reported by each municipality was included among the municipal expenditure variables, it must be noted that the amount reported does not include the expenditure for education by a fiscally independent school district associated with the municipality. Consequently, the expenditure for education must be regarded as incomplete. Expenditure for housing and urban renewal was not included in the analysis, since in several categories no expenditure for this purpose was reported which rendered an analysis of variance virtually meaningless. Expenditure for utilities represents the amount spent by the municipality for the operation of public utilities. Expenditure for capital outlay was treated as a single variable. Thus, the expenditure reported for the various municipal functions does not include any expenditure for capital outlay associated with that function.

Two general statistical procedures were utilized in the analysis of the data—factor analysis and multivariate analysis of variance. The four factoring procedures described previously were utilized. Only detailed results obtained from the alpha and image procedures will be reported, but comment will be made regarding the results obtained from the uniqueness rescaling and principal components procedures where appropriate. A weight of .40 was chosen arbitrarily as the criterion for determining whether or not a variable was associated with a given factor.

Separate multivariate analyses of variance were employed for the sets of revenue and expenditure variables. Long term debt was included in the set of expenditure variables.

Note will be taken of changes which occurred between 1962 and 1967. It is recognized that these two points in time are not adequate to define a trend. However, changes which occurred between 1962 and 1967 are descriptive of changes which occurred in the revenue and expenditure patterns of municipalities in each of the seven categories and may be indicative of future developments.

Analyses of Data for 1962

In this section the results obtained from the factor analytic procedures and from the multivariate analyses of variance will be reported. The results obtained from factor analysis of all variables will be reported first and will be followed by the results obtained from multivariate analyses of revenue and expenditure variables.

Mean Revenue and Expenditures

In Table 4.1 are reported the means and standard deviations of the six revenue variables, twenty-one expenditure variables, and long term debt for the total sample of municipalities and for each category of municipality. On a per capita basis, revenue from local property taxes constituted the largest single source of revenue for the total sample and the largest source of revenue for each category except small cities, where revenue per capita from utilities was greater than revenue per capita from property taxes. Revenue from utilities ranked as the second major source of revenue for the total sample and was an important revenue source in each of the seven categories. Revenue from other local taxes was an important source of revenue only in the major urban core city category. Revenue from other local sources (fees and miscellaneous charges) provided considerable revenue for the municipalities in each category. Revenue per capita from other governmental agencies was minimal in all categories. Revenue per capita from the state was greatest in the four city categories and ranked fourth among the six revenue sources for the total sample.

With regard to expenditures, for the entire sample the mean total general expenditure was $83 per capita and ranged from a high of $126 per capita in the major urban core city category to a low of $54 per capita in the developing suburb category. The largest expenditures were those for utilities and for capital outlay. Mean per capita expenditure for highways was highest in the two suburb categories and in the small town category. Mean expenditure per capita for public welfare was higher in the major urban core city and independent city categories than it was in the other five categories. Mean expenditure per capita for hospitals also was highest in these two categories. Mean per capita expenditure for police protection was considerably higher in the major urban core city category than in the other six categories. Mean expenditure per capita for fire protection was highest in the three large city categories. Mean expenditure per capita for sewerage was very similar in all seven categories, as was mean expenditure per capita for sanitation other than sewerage (although this expenditure was somewhat higher in the three large city categories than in the other four categories). Expenditure per capita for libraries was also somewhat higher in the three large city categories than in the other four categories. Mean expenditure per capita for financial administration, for general control, and for general public buildings was very similar in each of the seven categories. Mean expenditure per capita for interest on public debt was lowest in the suburb and small town categories and highest in the three large city categories. Mean expenditure per capita for utilities was highest in the independent city category and lowest in the two suburb categories. Mean expenditure per capita for capital outlay was highest in the three large city

TABLE 4.1

MEAN AND STANDARD DEVIATIONS OF SIX REVENUE VARIABLES, TWENTY-ONE EXPENDITURE VARIABLES, AND LONG TERM DEBT FOR THE TOTAL SAMPLE (221 MUNICIPALITIES) AND BY CATEGORIES FOR 1962 (DATA STANDARDIZED ON POPULATION)

Variable	Category A		Category B		Category C		Category D	
	Mean	S.D.	Mean	S.D.	Mean	S.D	Mean	S.D.
Revenue from:								
1. State	18	25	10	20	21	24	8	13
2. Intergovernmental	7	9	4	6	5	5	2	2
3. Property taxes	59	34	42	26	52	33	31	30
4. Other local taxes	16	21	9	11	9	10	2	1
5. Other local sources	25	11	21	17	27	20	11	11
6. Utilities	23	21	32	45	35	34	14	16
Expenditure for:								
1. Total general expenditures	126	77	97	58	124	65	61	46
2. General expenditures less capital outlay	99	67	71	47	93	50	49	32
3. Education	24	35	12	34	34	50	6	25
4. Education less capital outlay	23	32	10	30	26	38	4	15
5. Highways less capital outlay	6	3	6	3	8	4	10	5
6. Public welfare	3	11	1	5	5	11	0	1
7. Hospitals less capital outlay	4	10	2	8	6	14	2	3
8. Health	1	2	1	2	2	8	1	5
9. Police protection	14	5	9	4	9	2	7	6
10. Fire protection	10	3	9	4	9	4	4	4
11. Sewerage less capital outlay	3	1	2	2	2	2	3	5
12. Sanitation less sewerage	7	4	6	3	5	2	4	3
13. Parks and recreation	6	3	5	4	5	5	3	4
14. Libraries	2	1	2	1	2	3	1	1
15. Financial administration	2	1	2	1	2	1	2	1
16. General control	3	2	2	1	2	1	3	3
17. General public buildings	1	1	2	3	1	1	1	1
18. Unallocable less capital outlay	8	6	10	12	8	4	6	6
19. Interest on public debt	6	3	4	3	5	3	2	2
20. Utilities less capital outlay	17	23	30	65	35	47	15	23
21. Capital outlay	33	12	31	21	34	28	13	17
Long term debt	287	171	254	162	338	412	122	106

Category A = Major urban core city
Category B = Minor urban core city
Category C = Independent city
Category D = Established suburb
Category E = Developing suburb
Category F = Small city
Category G = Small town

TABLE 4.1 (cont.)

Variable	Category E Mean	Category E S.D.	Category F Mean	Category F S.D.	Category G Mean	Category G S.D.	Total Sample Mean	Total Sample S.D.
Revenue from:								
1. State	7	11	12	20	7	11	11	18
2. Intergovernmental	1	1	2	4	2	1	3	5
3. Property taxes	29	12	34	27	24	12	37	27
4. Other local taxes	3	2	5	6	6	7	6	9
5. Other local sources	10	8	20	20	14	8	18	16
6. Utilities	12	8	40	53	15	5	24	33
Expenditures for:								
1. Total general expenditures	54	24	84	62	59	27	83	58
2. General expenditures less capital outlay	42	20	64	49	45	19	63	44
3. Education	2	6	16	40	2	7	13	33
4. Education less capital outlay	2	6	13	32	2	6	10	26
5. Highways less capital outlay	10	5	8	4	9	4	8	4
6. Public welfare	1	2	0	1	0	1	1	6
7. Hospitals less capital outlay	1	2	0	1	1	2	2	7
8. Health	0	1	5	17	1	4	2	8
9. Police protection	6	3	8	3	7	3	8	4
10. Fire protection	3	2	6	4	4	2	6	4
11. Sewerage less capital outlay	2	1	3	2	3	1	3	2
12. Sanitation less sewerage	3	2	4	3	3	2	4	3
13. Parks and recreation	3	2	4	4	2	1	4	4
14. Libraries	1	1	1	1	1	1	1	2
15. Financial administration	2	1	2	1	2	1	2	1
16. General control	3	1	3	1	3	1	3	2
17. General public buildings	1	1	1	1	1	1	1	1
18. Unallocable less capital outlay	6	5	5	4	8	7	7	7
19. Interest on public debt	2	1	3	3	2	2	3	3
20. Utilities less capital outlay	12	8	33	48	16	5	23	39
21. Capital outlay	11	8	28	29	13	8	22	22
Long term debt	108	61	174	122	130	64	194	210

categories and lowest in the suburb and small town categories. Mean per capita long term debt was highest in the independent city category, the major urban core city category, and the minor urban core city category, and lowest in the suburb and small town categories.

Factor Analyses

The determinant of the correlation matrix was .12785-11, which led to rejection of the hypothesis that correlations of the variables in the population

differed only randomly from zero when Bartlett's test of sphericity was applied.

In Table 4.2 is displayed the rotated factor matrix obtained by applying the alpha factoring procedure to the twenty-eight revenue, expenditure, and long term debt variables for the total sample of municipalities. Estimates of the communality of each variable also are shown in Table 4.2 and indicate that several of the variables displayed a rather large amount of communality, i.e., they apparently are measuring attributes that have much in common. In Table 4.3 is displayed the rotated component matrix obtained by applying the image factoring procedure to the same array of variables.

Factor I extracted by the alpha procedure and Component I extracted by the image procedure were identical. The factor accounted for 30.6 percent of the factor variance in the alpha solution and 31.5 percent of the variance in the image solution. Three revenue variables—revenue from the state, from intergovernmental sources, and from local property taxes—were associated with this factor. Seven expenditure variables also were associated with the factor—total general expenditures, general expenditures exclusive of capital outlay, expenditure for education, expenditure for education exclusive of capital outlay, expenditure for fire protection, expenditure for libraries, and expenditure for capital outlay.

The second factor extracted using the alpha procedure and the second component extracted using the image procedure also were identical. This factor accounted for 15.8 percent of the factor variance in the alpha solution, and for 17.2 percent of the variance in the image solution. Revenue from other local taxes was associated with this factor. The expenditure variables associated with the factor were expenditure for police protection, for sanitation, for parks and recreation, for financial administration, and for interest on public debt. Long term debt also was associated with this factor.

Factor III extracted by the alpha procedure was associated with expenditure for police protection, for fire protection, and for sanitation other than sewerage, and with unallocable expenditure. Component III extracted by the image procedure was associated with revenue from utilities and expenditure for utilities. This factor accounted for 12.1 percent of the factor variance in the alpha solution, and for 10.4 percent of the factor variance in the image solution.

Factor IV extracted using the alpha procedure was identical with Component III extracted by the image procedure. Factor IV accounted for 9.9 percent of the factor variance. Revenue from utilities and expenditure for utilities were associated with this factor. Component IV extracted using the image procedure was associated with expenditure for highways and expenditure for general control. It accounted for 7.2 percent of the factor variance.

Factor V extracted using the alpha procedure, which accounted for 8.7 percent of the factor variance, was identical with Component IV obtained from the image procedure. Expenditure for highways and expenditure for general control were associated with this factor. Component V obtained from the image procedure was associated with revenue from other local sources and with expenditure for health. It accounted for 6.4 percent of the factor variance.

Factor VI obtained from the alpha procedure was very similar to Component V obtained using the image procedure. Factor VI accounted for 8.5 percent of

TABLE 4.2

ROTATED FACTOR MATRIX, ALPHA PROCEDURE, FOR SIX REVENUE VARIABLES, TWENTY-ONE EXPENDITURE VARIABLES, AND LONG TERM DEBT FOR THE TOTAL SAMPLE (221 MUNICIPALITIES) FOR 1962 (DATA STANDARDIZED ON POPULATION)

Variable	Factors I	II	III	IV	V	VI	VII	VIII	H^2
Revenue from:									
1. State	.854	.040	.063	−.046	.235	.007	.222	.026	.899
2. Intergovernmental	.441	.020	.376	.054	−.045	−.062	.235	.119	.509
3. Property taxes	.773	.192	.347	−.060	.245	−.064	.058	.058	.873
4. Other local taxes	−.023	.751	.113	.088	−.014	−.031	.208	.055	.649
5. Other local sources	.082	.212	.308	.182	−.232	.589	.389	.285	.795
6. Utilities	−.037	.328	−.064	.714	.030	.449	−.064	.067	.846
Expenditures for:									
1. Total general expenditures	.765	.307	.349	.127	.098	.186	.207	.262	.980
2. General expenditures less capital outlay	.785	.310	.317	.030	.204	.244	.271	.117	.994
3. Education	.960	.035	−.047	−.026	−.014	.019	−.001	.159	.978
4. Education less capital outlay	.984	.046	−.033	−.016	−.020	.024	.002	.025	.989
5. Highways less capital outlay	.217	−.157	.041	−.048	.762	.015	.046	.127	.719
6. Public welfare	.208	.368	.049	−.025	.149	−.118	.658	−.116	.806
7. Hospitals less capital outlay	.140	.023	.124	.029	.030	.155	.759	.013	.718
8. Health	.072	.043	.019	.157	−.009	.819	.023	−.064	.744
9. Police protection	.218	.472	.579	.080	.330	.056	.097	.068	.782
10. Fire protection	.440	.268	.572	−.009	−.010	.051	.202	.030	.764
11. Sewerage less capital outlay	.189	.104	.032	.029	.206	−.003	−.034	.643	.526
12. Sanitation less sewerage	.136	.570	.437	.069	.136	.146	−.037	.018	.677
13. Parks and recreation	.255	.456	.205	.146	.286	.220	−.086	.314	.619
14. Libraries	.492	.173	.264	.158	.221	.128	−.009	.112	.488
15. Financial administration	.139	.462	.200	.168	.219	.272	.008	.024	.451
16. General control	.043	.139	.110	.025	.567	−.059	.050	.022	.359
17. General public building	.087	−.005	.399	.339	.134	−.152	.019	−.077	.335
18. Unallocable less capital outlay	.068	.193	.607	−.137	.068	.160	.074	.126	.637
19. Interest on public debt	.346	.592	.190	.092	−.208	.065	.089	.366	.705
20. Utilities less capital outlay	−.057	.170	−.006	.880	−.023	.156	.050	.090	.804
21. Capital outlay	.475	.162	.290	.344	−.222	−.042	−.030	.473	.842
Long term debt	.238	.563	.003	.365	−.160	.024	.153	.053	.639
Factor variance	5.781	2.972	2.289	1.862	1.639	1.609	1.537	1.171	
% of factor variance	30.6	15.8	12.1	9.9	8.7	8.5	8.2	6.2	
% of total variance = 67.4									

TABLE 4.3

ROTATED COMPONENT MATRIX, IMAGE PROCEDURE, FOR SIX REVENUE VARIABLES, TWENTY-ONE EXPENDITURE VARIABLES, AND LONG TERM DEBT FOR THE TOTAL SAMPLE (221 MUNICIPALITIES) FOR 1962 (DATA STANDARDIZED ON POPULATION)

	Components								
Variable	I	II	III	IV	V	VI	VII	VIII	IX
Revenue from:									
1. State	.866	.043	−.036	.201	.013	.117	.050	.042	.197
2. Intergovernmental	.434	.161	−.061	.008	.047	.179	.213	.066	.103
3. Property taxes	.764	.262	−.121	.225	−.012	.047	.232	.110	.086
4. Other local taxes	.008	.701	.166	−.030	−.043	.148	−.016	.004	.153
5. Other local sources	.117	.287	.242	−.161	.508	.407	.031	.163	.041
6. Utilities	−.029	.237	.804	.010	.298	−.014	.029	.046	−.018
Expenditures for:									
1. Total general expenditures	.775	.360	.137	.115	.172	.166	.149	.200	.112
2. General expenditures less capital outlay	.807	.363	.071	.196	.210	.222	.122	.104	.134
3. Education	.972	.016	−.000	−.011	−.004	.006	−.052	.125	−.038
4. Education less capital outlay	.987	.023	.001	−.002	−.001	.007	−.037	.023	−.035
5. Highways less capital outlay	.206	−.098	−.078	.723	.057	−.004	.069	.115	.063
6. Public welfare	.188	.275	−.009	.149	−.047	.343	.035	−.048	.676
7. Hospitals less capital outlay	.171	.106	.028	.053	.118	.721	.054	−.021	.172
8. Health	.069	.078	.238	.011	.753	.009	−.066	−.038	−.041
9. Police protection	.233	.605	.043	.299	.082	.137	.355	.100	.042
10. Fire protection	.430	.398	−.061	−.010	.109	.173	.381	.096	.169
11. Sewerage less capital outlay	.197	.121	.061	.159	−.011	−.002	−.009	.587	−.027
12. Sanitation less sewerage	.155	.638	.085	.123	.144	.041	.192	.053	−.004
13. Parks and recreation	.266	.487	.226	.221	.191	−.050	.073	.291	.015
14. Libraries	.490	.228	.151	.205	.095	.026	.179	.074	−.032
15. Financial administration	.144	.428	.237	.195	.243	−.046	.066	.045	.147
16. General control	.054	.169	.009	.523	−.054	.040	.078	.044	.031
17. General public buildings	.080	.091	.155	.120	−.061	.025	.441	−.015	.006
18. Unallocable less capital outlay	.119	.307	−.084	.107	.122	.104	.187	.072	.038
19. Interest on public debt	.357	.580	.146	−.136	.058	.084	.013	.229	.011
20. Utilities less capital outlay	−.048	.111	.830	−.045	.091	.058	.154	.063	−.012
21. Capital outlay	.447	.197	.267	−.149	−.004	−.046	.172	.330	.016
Long term debt	.247	.426	.382	−.163	−.010	.063	.043	.016	.159
Factor variance	5.866	3.211	1.946	1.345	1.188	1.042	.798	.762	.691
% of factor variance	31.5	17.2	10.4	7.2	6.4	5.6	4.3	4.1	3.7
% of total variance = 66.5									

TABLE 4.3 (cont.)

Variable	Components X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX
Revenue from:										
1. State	.011	−.030	−.072	−.014	.024	−.042	−.120	.011	.012	−.004
2. Intergovernmental	.093	.196	−.045	.008	.261	−.005	−.002	−.001	.001	−.000
3. Property taxes	.110	.044	.044	.122	−.065	.058	.125	−.013	.011	−.005
4. Other local taxes	.008	.058	.021	−.029	.029	−.103	−.006	−.007	−.012	.000
5. Other local sources	.286	.136	.115	.005	.039	−.060	−.031	−.011	.005	.002
6. Utilities	−.011	.006	−.030	.010	.011	.043	.019	−.002	−.003	.003
Expenditures for:										
1. Total general expenditures	.176	.219	.000	.021	.023	.010	.020	.008	.004	−.002
2. General expenditures less capital outlay	.159	.022	.003	.030	.029	.006	.007	−.000	.008	−.001
3. Education	−.022	.037	.049	−.051	−.014	.012	.028	.010	−.007	−.001
4. Education less capital outlay	−.022	−.004	.064	−.045	.002	−.009	−.008	.002	−.003	.001
5. Highways less capital outlay	.048	−.034	.033	.057	.036	−.025	−.010	−.027	.047	.000
6. Public welfare	.045	.014	.027	.006	.018	−.001	.001	−.000	.000	−.000
7. Hospitals less capital outlay	.056	−.018	−.002	.006	.010	.006	.002	.001	−.000	−.000
8. Health	.043	−.024	−.025	.008	−.000	.015	.008	−.001	.000	−.001
9. Police protection	.193	.001	−.097	.147	−.018	−.009	−.007	.024	.032	−.001
10. Fire protection	.196	.018	−.155	.223	.041	−.075	.004	.032	.016	−.019
11. Sewerage less capital outlay	.045	.072	.005	.003	.002	−.001	−.002	.003	.002	−.000
12. Sanitation less sewerage	.187	−.001	−.016	−.028	−.013	.205	.011	.000	−.002	−.000
13. Parks and recreation	.058	−.055	−.092	.080	.072	.064	.062	−.034	−.035	.006
14. Libraries	.106	.088	.008	.168	.002	.039	.005	−.035	−.021	.020
15. Financial administration	.149	.049	.011	.019	−.017	.006	−.034	.075	−.004	.001
16. General control	.021	−.013	−.046	−.038	−.026	.026	.008	.020	−.035	−.000
17. General public buildings	.078	.040	.019	−.011	.010	.009	.000	−.003	−.003	.001
18. Unallocable less capital outlay	.573	.059	−.002	.012	.014	.008	.003	−.001	−.000	.000
19. Interest on public debt	.108	.198	.178	.007	.039	−.076	.003	−.049	.025	−.001
20. Utilities less capital outlay	−.046	.073	.035	−.005	−.012	−.031	−.016	−.001	.002	−.001
21. Capital outlay	.133	.560	.017	.008	.037	.002	.000	.003	−.001	.000
Long term debt	−.000	.022	.330	−.020	−.042	−.001	.003	.005	−.001	−.001
Factor variance	.685	.498	.220	.135	.092	.083	.038	.014	.008	.001
% of factor variance	3.7	2.7	1.2	0.7	0.5	0.4	.02	0.1	0	0
% of total variance	66.5									

the factor variance. Revenue from other local taxes and revenue from utilities were associated with the factor, as was expenditure for health. Component VI obtained from the image procedure was associated with revenue from other local sources and with expenditure for hospitals. It accounted for 5.6 percent of the factor variance.

Factor VII of the solution obtained using the alpha procedure was associated with expenditure for public welfare and for hospitals and was similar to Component VI obtained from the image procedure. Component VII obtained from the image procedure was associated with expenditure for general public buildings.

Factor VIII extracted by the alpha procedure was associated with expenditure for sewerage. Component VIII extracted by the image procedure also was associated with expenditure for sewerage.

Component IX extracted by the image procedure was associated with expenditure for public welfare; Component X was associated with unallocable expenditure; and Component XI was associated with expenditure for capital outlay. The remaining eight components extracted by the image procedure could not be interpreted.

The solution obtained from the alpha procedure accounted for 67.4 percent of the total variance associated with the array of variables. The first three components extracted accounted for nearly 60 percent of the variance associated with the factors. The solution obtained from the image procedure accounted for 66.5 percent of the total variance, and the first three factors extracted accounted for nearly 60 percent of the factor variance.

Analyses of Variance

One multivariate analysis of variance was performed using the six revenue variables and the seven categories of municipalities. A second multivariate analysis of variance was performed using the twenty-one expenditure variables and long term debt for the seven categories. In each analysis an a priori set of planned comparisons between categories was developed. After examination of the descriptive statistics, the planned comparisons were modified in terms of the likelihood that a null hypothesis would be rejected.

Revenue Data

In Table 4.4 is shown the a priori planned order of comparisons between the categories on revenue data for 1962. The first planned comparison was between Category A and Category B, the second between Category F and Category G, etc. After examination of the descriptive statistics, it appeared that only one or two comparisons could be made before rejection of the null hypothesis. Consequently, H_1 compared categories A and B; H_2 compared all remaining sources of variation.

In Table 4.5 are shown the results of the test of H_1, i.e., no significant difference between the major urban core city and minor urban core city categories. The multivariate test of equality of mean vectors produced a value of 2.784 with an associated probability of .013. Thus, at the .01 level of confidence the null hypothesis is accepted; at the .05 level it would not be accepted. The step-down F ratios reported for each variable indicated that revenue from other local taxes was the largest single source of variation between the two categories.

TABLE 4.4

PLANNED ORDER OF COMPARISONS BETWEEN CATEGORIES ON REVENUE DATA FOR 1962

Design Matrix	Category of Municipality A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2						X	X
Comparison 3					X	X	
Comparison 4				X	X		
Comparison 5			X	X			
Comparison 6		X	X				

TABLE 4.5

H_1: A=B (MAJOR URBAN CORE CITY VS. MINOR URBAN CORE CITY) REVENUE DATA FOR 1962

Multivariate F Ratio = 2.784; p = .013; df = 6 and 209

Source of Revenue	Mean Square	Univariate F*	p	Stepdown F	p
1. State	5.990	1.872	.173	1.872	.173
2. Intergovernmental	1.110	5.791	.017	4.098	.044
3. Local property tax	25.961	3.987	.047	1.537	.217
4. Other local taxes	5.737	8.028	.005	7.520	.007
5. Other local sources	1.785	.822	.366	.007	.935
6. Utilities	6.912	.680	.411	1.439	.232

*df = 1 and 214

TABLE 4.6

H_2: B=C, C=D, D=E, E=F, F=G (ALL REMAINING SOURCES OF VARIATION) REVENUE DATA FOR 1962

Multivariate F Ratio = 3.810, p = .0001, df = 30 and 841

Source of Revenue	Mean Square	Univariate F*	p	Stepdown F	p
1. State	10.423	3.257	.008	3.257	.008
2. Intergovernmental	.911	4.755	.0004	3.186	.009
3. Local property tax	44.007	6.758	.0001	3.872	.002
4. Other local taxes	4.558	6.379	.0001	5.279	.0002
5. Other local sources	16.050	7.392	.0001	3.936	.002
6. Utilities	52.743	5.190	.0002	3.087	.010

*df = 5 and 214

TABLE 4.7

DISCRIMINANT FUNCTION COEFFICIENTS FOR THE CANONICAL VARIATES INCLUDED WITHIN H_2, PERCENTAGE OF CANONICAL VARIATION ATTRIBUTABLE TO EACH COMPARISON AND SIGNIFICANCE OF SUCCESSIVE COMPARISONS, REVENUE DATA FOR 1962

	Raw Coefficients					Standardized Coefficients				
Source of Revenue	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5
1. State	.086	.401	-.548	-.070	.142	.154	.717	-.980	-.125	.254
2. Intergovernmental	-.723	-.831	.515	.296	-1.754	-.317	-.364	.225	.130	-.768
3. Local property tax	-.240	-.126	.345	-.236	.163	-.613	-.323	.882	-.602	.417
4. Other local taxes	-.440	-.669	-.476	.576	.544	-.372	-.565	-.402	.487	.460
5. Other local sources	-.261	.136	-.339	-.134	-.277	-.385	.200	-.500	-.197	-.408
6. Utilities	-.096	.215	.191	.140	.036	-.305	.685	.609	.445	.113
% of canonical variation	75.49	14.92	5.39	4.11	.09					

Bartlett's test for significance of successive comparisons:

Roots 1-5 Chi Square = 108.97, df = 30, p = .0001
Roots 2-5 Chi Square = 30.04, df = 20, p = .069
Roots 3-5 Chi Square = 11.95, df = 12, p = .450
Roots 4-5 Chi Square = 5.24, df = 6, p = .513
Root 5 Chi Square = .11, df = 2, p = .946

In Table 4.6 are reported the results of the test of H_2 (no significant difference in all remaining sources of variation). The multivariate F ratio obtained, 3.810, was significant at the .0001 level. Therefore, the hypothesis was rejected. The univariate and step-down F ratios indicated that all six revenue variables contributed substantially to the variation.

In Table 4.7 are displayed the discriminant function coefficients for the canonical variates included within H_2. Revenue from the local property tax was the most potent discriminator with regard to canonical variate 1. Revenue from the state and revenue from utilities were most effective in discriminating with regard to canonical variate 2. For canonical variate 3, revenue from the state discriminated best. Revenue from the local property tax was the most useful discriminator with regard to canonical variate 4, and revenue from other governmental sources discriminated best with regard to canonical variate 5. It should be noted that canonical variate 1 accounted for over 75 percent of the canonical variation and that canonical variate 2 accounted for nearly 15 percent of the variation. The three remaining variates accounted for less than 10 percent of the canonical variation.

Application of Bartlett's test for significance of successive comparisons indicated that roots 1-5 were significant at the .0001 level, and that none of the other roots were significant.

The restriction against further analysis after the rejection of a null hypothesis was then relaxed, and all planned comparisons were carried out. The results are provided in Table 4.8. A multivariate F ratio statistically significant at beyond the .0001 level was found in the comparison of the independent city and

TABLE 4.8

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS AND MULTIVARIATE F RATIOS FOR THE PLANNED COMPARISONS, REVENUE DATA FOR 1962

Source of Revenue	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
1. State	.112	.791	−.104	−.407	−.390	−.070
2. Intergovernmental	−.468	−.432	−.209	−.007	−.109	.059
3. Local property tax	−.344	−.914	−.514	.416	.213	.578
4. Other local taxes	−.737	−.350	−.286	−.611	−.249	−.299
5. Other local sources	−.123	−.183	−.504	−.282	−.429	.154
6. Utilities	.334	−.320	−.204	−.417	−.608	.899
Multivariate F ratio	2.784	2.728	8.657	.691	1.426	3.018
df	6&209	6&209	6&209	6&209	6&209	6&209
p	.013	.014	.0001	.657	.206	.008

established suburb categories. When the small city category was compared with the small town category, a difference statistically significant at beyond the .01 level was observed. Comparison of the minor urban core city and independent city categories produced a multivariate F ratio significant at beyond the .05 level. In the remaining comparisons—established vs. developing suburb and developing suburb vs. small city, no statistically significant differences were found.

Revenue from other local taxes was found to be the variable which best discriminated between the major and minor urban core city categories, and between the established and developing suburb categories. In the comparisons involving the minor urban core city vs. the independent city, and the independent city vs. the established suburb categories, local property tax was the most useful discriminator. Revenue from utilities was the variable which discriminated most effectively in the comparisons involving the developing suburb vs. small city categories and the small city vs. small town categories.

Expenditure Data

In Table 4.9 is shown the a priori planned order of comparisons between categories on expenditure data. Examination of the means and standard deviations again indicated that a null hypothesis was likely to be rejected before all comparisons could be completed. Therefore, all sources of variation beyond the first comparison were combined in H_2.

TABLE 4.9

PLANNED ORDER OF COMPARISONS BETWEEN CATEGORIES, EXPENDITURE DATA FOR 1962

Design Matrix	Category of Municipality						
	A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2						X	X
Comparison 3					X	X	
Comparison 4				X	X		
Comparison 5			X	X			
Comparison 6		X	X				

In Table 4.10 are displayed the results of the test of H_1, i.e., no significant difference between the major urban core city category and the minor urban core city category. The multivariate F ratio obtained, 1.855, was significant at the .014 level of confidence. Thus, the hypothesis was accepted at the .01 level but would not be accepted at the .05 level of confidence. Examination of the

TABLE 4.10

H_1: A=B (MAJOR URBAN CORE CITY VS. MINOR URBAN CORE CITY) EXPENDITURE DATA FOR 1962

Multivariate F Ratio = 1.855; p = .014; df = 22 and 193

Purpose of Expenditure	Mean Square	Univariate F*	p	Step-down F	p
1. Total general expenditure	80.511	2.989	.085	2.989	.085
2. General expenditure less capital outlay	73.143	4.467	.036	2.041	.155
3. Education	14.359	1.425	.234	.266	.606
4. Education less capital outlay	14.264	2.268	.134	1.081	.300
5. Highways less capital outlay	.019	.122	.727	1.065	.303
6. Public welfare	.390	1.182	.278	.004	.950
7. Hospitals less capital outlay	.504	1.085	.299	.014	.907
8. Health	.002	.003	.956	1.289	.258
9. Police protection	1.905	13.910	.0003	13.029	.0004
10. Fire protection	.261	2.435	.120	.091	.764
11. Sewerage less capital outlay	.003	.048	.827	.074	.786
12. Sanitation less sewerage	.211	2.972	.086	.111	.739
13. Parks and recreation	.343	2.819	.095	1.397	.239
14. Libraries	.022	.829	.364	.319	.367
15. Financial administration	.0001	.007	.932	1.961	.163
16. General control	.015	.620	.432	.042	.838
17. General public buildings	.049	2.972	.086	7.263	.008
18. Unallocable less capital outlay	.157	.353	.553	3.154	.077
19. Interest on public debt	.313	5.677	.018	1.211	.273
20. Utilities less capital outlay	14.436	.970	.326	.724	.396
21. Capital outlay Long Term Debt	.510	.128	.721	.688	.408
	104.250	.275	.601	.350	.555

*df = 1 and 214

univariate and step-down F ratios indicated that only expenditure for police protection varied greatly between the two categories.

The results of the test of H_2, i.e., no significant difference in all remaining sources of variation, are shown in Table 4.11. A multivariate F ratio of 3.424 was obtained, which was significant at the .0001 level of confidence. The null hypothesis was rejected. Examination of the univariate and step-down F ratios shown in Table 4.11 indicated that the variables which contributed most to the variation were total general expenditure, expenditure for highways, for health,

TABLE 4.11

H_2: B=C, C=D, D=E, E=F, F=G, (ALL REMAINING SOURCES OF VARIATION)
EXPENDITURE DATA FOR 1962

Multivariate F Ratio = 3.424; p = .0001; df = 110 and 955

Purpose of Expenditure	Mean Square	Univariate F*	p	Step-down F	p
1. Total general expenditure	291,433	10.821	.0001	10.821	.0001
2. General expenditure less capital outlay	154.032	9.406	.0001	.204	.961
3. Education	51.131	5.075	.0003	1.635	.152
4. Education less capital outlay	31.394	4.991	.0003	1.755	.124
5. Highways less capital outlay	.894	5.674	.0001	15.336	.0001
6. Public welfare	1.312	3.972	.002	2.823	.017
7. Hospitals less capital outlay	1.477	3.182	.009	1.888	.098
8. Health	.940	1.459	.205	5.116	.0002
9. Police protection	.951	6.943	.0001	.565	.727
10. Fire protection	2.546	23.759	.0001	5.786	.0001
11. Sewerage less capital outlay	.032	.574	.720	1.299	.266
12. Sanitation less sewerage	.500	7.037	.0001	1.578	.168
13. Parks and recreation	.677	5.562	.0001	3.283	.007
14. Libraries	.107	4.040	.002	.367	.871
15. Financial administration	.015	1.610	.159	1.707	.135
16. General control	.053	2.183	.057	2.334	.044
17. General public buildings	.040	2.445	.035	.726	.605
18. Unallocable less capital outlay	.959	2.161	.060	5.155	.0002
19. Interest on public debt	.711	12.900	.0001	2.193	.057
20. Utilities less capital outlay	34.150	2.294	.047	1.460	.205
21. Capital outlay	41.147	10.327	.0001	5.332	.0002
Long Term Debt	3094.766	8.155	.0001	1.059	.384

*df = 5 and 214

for fire protection, for parks and recreation, for capital outlay, and unallocable expenditures.

In Table 4.12 are shown the discriminant function coefficients for the canonical variates included within H_2. Application of Bartlett's test for significance of successive comparisons indicated that roots 1-5 were significant at the .0001 level, that roots 2-5 were significant at the .002 level, and that the remaining roots were not significant.

With regard to canonical variate 1, the data displayed in Table 4.12 indicated

TABLE 4.12

DISCRIMINATE FUNCTION COEFFICIENTS FOR THE CANONICAL VARIATES INCLUDED WITHIN H_2, PERCENTAGE OF CANONICAL VARIATION ATTRIBUTABLE TO EACH COMPARISON, AND SIGNIFICANCE OF SUCCESSIVE COMPARISONS, EXPENDITURE DATA FOR 1962

	Raw Coefficients					Standardized coefficients				
Purpose of	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5
1. Total general expenditure	.262	-.355	.477	.274	-.053	1.358	-1.840	2.473	1.423	-.276
2. General expenditure less capital outlay	-.847	1.193	-.775	.024	.158	-3.428	4.828	3.137	.098	.638
3. Education	.161	-.611	-.530	-.479	-.604	.511	-1.941	-1.682	-1.522	-1.917
4. Education less capital outlay	.377	-.103	.812	.343	.593	.946	-.257	2.037	.861	1.487
5. Highways less capital outlay	1.988	-2.046	-.095	-.397	.648	.789	-.812	-.038	-.157	.257
6. Public Welfare	.738	-1.314	-.052	-.273	.021	.424	-.755	-.030	-.157	.012
7. Hospitals less capital outlay	.412	-1.298	.384	-436	.060	.281	-.884	.261	-.297	.041
8. Health	.616	-.211	-.214	-.161	-.331	.495	-.169	-.172	-.129	-.266
9. Police protection	.458	.085	.955	.594	-2.095	.169	.031	.353	.220	-.775
10. Fire protection	-1.673	-.956	-.032	-.629	-.106	-.548	-.313	-.010	-.206	-.035
11. Sewerage less capital outlay	1.585	2.129	.293	-.077	-1.158	.372	.500	.069	-.018	-.272
12. Sanitation less sewerage	.268	-.290	.289	-3.152	1.271	.072	-.077	.077	-.841	.339
13. Parks and recreation	-.448	-1.931	.587	-1.150	1.190	-.156	-.674	.205	-.401	.415
14. Libraries	-.155	-.529	-.200	-1.429	-2.045	-.025	-.086	-.033	-.232	-.332
15. Financial administration	2.786	-1.617	-.631	5.496	5.219	.266	-.154	-.060	.524	.497
16. General control	1.517	1.446	-.743	-2.243	-1.922	.236	.225	-.116	-.349	-.299
17. General public buildings	-.119	-.073	3.684	-1.219	2.803	-.015	-.009	.473	-.156	.360

TABLE 4.12 (cont.)

Purpose of Expenditure	Raw Coefficients					Standardized Coefficients				
	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5
18. Unallocable less capital outlay	.808	-.853	.623	.001	-.520	.538	-.568	.415	.001	-.346
19. Interest on public debt	-.296	-1.548	2.145	.877	-.163	-.070	-.363	.504	.206	-.038
20. Utilities less capital outlay	.015	-.020	-.099	.040	-.060	.058	-.076	-.383	.153	-.230
21. Capital outlay	-.353	.343	-.530	-.168	.231	-.704	.685	-1.058	-.336	.461
Long term debt	-.011	-.013	-.005	-.004	-.015	-.224	-.255	-.103	-.080	-.301
% of canonical variation	71.90	12.67	9.34	4.32	1.78					
Bartlett's test for significance of successive comparisons:	Roots 1-5 Chi Square = 335.49, df = 110, p = .0001 Roots 2-5 Chi Square = 126.96, df = 84, p = .002 Roots 3-5 Chi Square = 71.55, df = 60, p = .146 Roots 4-5 Chi Square = 29.32, df = 38, p = .843 Root 5 Chi Square = 8.73, df = 18, p = .966									

that total general expenditure exclusive of capital outlay was the variable which best discriminated, and that with regard to canonical variates 2 and 3, total general expenditure exclusive of capital outlay also was the most useful discriminator. Expenditure for education best discriminated with regard to canonical variates 4 and 5. Canonical variate 1 accounted for nearly 72 percent of the canonical variation and canonical variate 2 accounted for nearly 13 percent of the variation.

When the restriction with regard to additional analysis after rejection of a null hypothesis was relaxed and all planned comparisons were made, the results displayed in Table 4.13 were obtained. Multivariate F ratios which were significant at beyond the .0001 level were found between the minor urban core

TABLE 4.13

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS AND MULTIVARIATE F RATIOS FOR THE PLANNED COMPARISONS, EXPENDITURE DATA FOR 1962

Purpose of Expenditure	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
1. Total general expenditures	−.569	.951	.572	.629	2.067	3.294
2. General expenditures less capital outlay	.069	−3.489	−1.013	1.642	−5.418	−6.124
3. Education	−1.410	1.036	−.759	−2.103	.399	.142
4. Education less capital outlay	1.812	.843	.998	.831	1.791	1.894
5. Highways less capital outlay	−.239	.895	.290	−.334	1.062	.774
6. Public welfare	.137	.613	−.001	−.300	.696	.543
7. Hospitals less capital outlay	.079	.394	−.148	−.403	.795	.638
8. Health	.041	.597	.319	−.329	.304	.332
9. Police protection	1.125	.387	.188	−.075	−.146	.456
10. Fire protection	.004	−.502	−.625	−.068	−.189	−.293
11. Sewerage less capital outlay	−.104	.236	.569	−.167	−.059	.152
12. Sanitation less sewerage	.063	.044	.051	−.705	.456	−.042
13. Parks and recreation	.230	−.062	−.420	−.260	.549	.156
14. Libraries	−.183	−.051	−.073	−.302	−.053	.013
15. Financial administration	−.310	.237	.154	.540	.301	.214
16. General control	.014	.237	.294	−.449	−.013	.001
17. General public buildingss	−.428	−.288	.056	−.063	.322	.201
18. Unallocable less capital outlay	−.425	.418	.238	−.293	.646	.890
19. Interest on public debt	.295	−.072	−.172	.151	.220	.425
20. Utilities less capital outlay	−.144	.156	−.043	.075	−.165	−.099
21. Capital outlay	.332	−.482	−.397	.104	−.862	−1.472
Long term debt	−.142	−.178	−.338	−.106	−.162	−.091
Multivariate F ratio	1.855	5.709	6.809	.889	1.596	3.035
df	22&193	22&193	22&193	22&193	22&193	22&193
p	.014	.0001	.0001	.609	.051	.0001

city and independent city categories, the independent city and established suburb categories, and the small city and small town categories. The remaining comparisons–established vs. developing suburb categories and developing suburb vs. small city categories–did not produce statistically significant F ratios.

Total general expenditures exclusive of capital outlay was the variable which was the best discriminator between the minor urban core city and independent city categories, the independent city and established suburb categories, the developing suburb and small city categories, and the small city and small town categories. In the comparison of the major and minor urban core city categories, expenditure for education exclusive of capital outlay proved to be the best discriminator. Expenditure for education was the variable which was most useful in discriminating between the established suburb and developing suburb categories. It should be cautioned, however, that the expenditure for education used in this study is an incomplete measure, and may simply reflect differences in the mix of fiscally dependent and fiscally independent school districts in each category.

Analyses of Data for 1967

The same statistical analyses which were applied to the revenue and expenditure data for 1962 also were applied to the data for 1967. The results of the factoring procedures will be reported in the first portion of this section; the results of the analyses of variance will be reported in the second portion.

Mean Revenue and Expenditure

In Table 4.14 are displayed the means and standard deviations of the six revenue variables, twenty-one expenditure variables and long term debt for each of the seven categories of municipalities and for the total sample. Revenue from property taxes was the most important source of revenue for the total sample, with a mean of $52 per capita. Revenue from utilities ranked second, revenue from other local sources ranked third, revenue from the state ranked fourth, revenue from other local taxes ranked fifth, and revenue from other governmental agencies ranked sixth.

Revenue from local property taxes was the largest single source of revenue for the major urban core city category ($70 per capita); for the minor urban core city category ($52 per capita); for the independent city category ($63 per capita); for the established suburb category ($46 per capita); for the developing suburb category ($51 per capita); and for the small town $48 per capita). In the small city category, mean revenue per capita from utilities ($46) was greater than mean revenue per capita from local property taxes ($43).

With regard to expenditures, for the total sample the mean total general expenditure per capita was $107. The largest single component was expenditure for capital outlay ($29 per capita), followed by expenditures for utilities ($26 per capita).

In the major urban core city category, the mean total expenditure per capita was $176. The largest single component was expenditure for capital outlay ($46 per capita). Other major components were expenditure for police protection, for fire protection, for parks and recreation, for unallocable expenditures, and for utilities.

TABLE 4.14

MEANS AND STANDARD DEVIATIONS OF SIX REVENUE VARIABLES, TWENTY-ONE EXPENDITURE VARIABLES, AND LONG TERM DEBT FOR THE TOTAL SAMPLE (221 MUNICIPALITIES) AND BY CATEGORIES FOR 1967 (DATA STANDARDIZED ON POPULATION)

Variable	Category A Mean	Category A S.D.	Category B Mean	Category B S.D.	Category C Mean	Category C S.D.	Category D Mean	Category D S.D.
Revenue from:								
1. State	35	61	14	27	30	34	13	20
2. Intergovernmental	20	25	8	17	7	9	4	6
3. Property taxes	70	48	52	46	63	44	46	38
4. Other local taxes	21	31	14	23	11	13	.3	2
5. Other local sources	34	19	30	22	35	24	18	20
6. Utilities	28	24	40	57	44	48	19	21
Expenditure for:								
1. Total general expenditures	176	132	122	90	159	76	88	67
2. General expenditures less capital outlay	136	124	89	76	118	65	68	48
3. Education	38	63	11	38	43	64	12	38
4. Education less capital outlay	34	53	6	27	31	47	8	29
5. Highways less capital outlay	7	3	7	4	9	4	10	4
6. Public welfare	7	25	2	8	5	16	0	1
7. Hospitals less capital outlay	4	14	3	12	6	18	6	19
8. Health	3	3	2	2	2	3	0	1
9. Police protection	18	8	13	10	12	4	9	6
10. Fire protection	13	5	13	9	12	6	5	4
11. Sewerage less capital outlay	3	1	4	2	3	2	4	5
12. Sanitation less sewerage	9	4	7	6	6	3	5	3
13. Parks and recreation	11	7	7	5	7	6	4	4
14. Libraries	3	2	2	2	3	3	2	2
15. Financial administration	3	1	3	2	3	1	2	1
16. General control	3	2	3	3	3	2	4	6
17. General public buildings	2	1	2	3	3	6	3	5
18. Unallocable less capital outlay	13	10	14	19	12	7	9	13
19. Interest on public debt	8	5	7	4	6	3	3	2
20. Utilities less capital outlay	21	26	27	37	38	46	16	17
21. Capital outlay	46	14	36	36	46	42	21	27
Long term debt	348	213	330	215	352	236	163	136

Category A = Major urban core city
Category B = Minor urban core city
Category C = Independent city
Category D = Established suburb
Category E = Developing suburb
Category F = Small city
Category G = Small town

TABLE 4.14 (cont.)

Variable	Category E Mean	Category E S.D.	Category F Mean	Category F S.D.	Category G Mean	Category G S.D.	All Districts Mean	All Districts S.D.
Revenue from:								
1. State	10	15	14	26	10	18	16	28
2. Intergovernmental	7	27	6	13	3	2	7	16
3. Property taxes	51	85	43	43	48	75	52	57
4. Other local taxes	3	2	7	10	7	10	8	15
5. Other local sources	14	10	21	11	23	11	24	19
6. Utilities	18	14	46	58	28	12	32	41
Expenditure for:								
1. Total general expenditures	66	36	102	84	79	39	107	80
2. General expenditures less capital outlay	48	22	76	64	59	26	30	65
3. Education	1	5	22	64	5	22	17	47
4. Education less capital outlay	1	4	17	49	2	10	13	36
5. Highways less capital outlay	11	5	9	7	11	5	9	5
6. Public welfare	0	0	0	1	0	0	2	9
7. Hospitals less capital outlay	2	2	1	4	3	3	3	12
8. Health	0	0	1	1	0	0	1	2
9. Police protection	7	4	9	4	10	4	10	6
10. Fire protection	3	2	8	5	4	2	8	6
11. Sewerage less capital outlay	4	3	4	2	4	2	4	3
12. Sanitation less sewerage	4	2	5	3	7	13	6	6
13. Parks and recreation	3	3	4	3	4	3	5	5
14. Libraries	1	1	2	4	1	1	2	2
15. Financial administration	2	1	2	1	2	1	2	1
16. General control	4	2	3	1	4	1	4	3
17. General public buildings	2	1	4	9	2	2	3	5
18. Unallocable less capital outlay	6	4	7	4	9	7	10	11
19. Interest on public debt	2	1	4	3	3	3	4	4
20. Utilities less capital outlay	16	16	33	41	28	14	26	32
21. Capital outlay	17	24	30	29	17	10	29	31
Long term debt	134	103	189	120	165	105	230	185

In the minor urban core city category the mean total expenditure per capita was $122. Expenditure for capital outlay ($36 per capita) was the largest single component of expenditure. Other major components of expenditure were those for police protection and for fire protection, unallocable expenditures, and expenditure for utilities.

The mean total general expenditure per capita in the independent city category was $159. The largest component was expenditure for capital outlay ($46 per capita). Other major components of expenditure were those for police protection, for fire protection, for unallocable expenses, and for utilities.

The mean total expenditure per capita in the established suburb category was $88. Capital outlay ($21 per capita) was the largest component of expenditure in this category. Other large components were expenditures for highways and for police protection, unallocable expenditures, and expenditure for utilities.

The mean total expenditure per capita in the developing suburb category was $66. Expenditure for capital outlay ($17 per capita) was the largest component of expenditure in this category. Expenditure for highways, for police protection, unallocable expenditures, and expenditure for utilities were the largest components of expenditure by municipalities in this category.

In the small city category, the mean total general expenditure per capita was $102. Expenditure for utilities ($33 per capita) was the largest component of expenditure by municipalities in this category and was followed closely by expenditure for capital outlay ($30 per capita). Other important components of expenditure in this category were expenditure for highways, for police protection, for fire protection, and unallocable expenditure.

The mean total general expenditure for the small town category was $79 per capita. Expenditure for utilities ($28 per capita) was the largest component of expenditure. Other major components of the expenditures of municipalities in this category were expenditure for highways, police protection, unallocable expenditure, and expenditure for utilities.

Factor Analyses

The four factoring procedures which were applied to the 1962 data for municipalities also were applied to the data for 1967. Only the results obtained from the alpha and image procedures will be reported in detail, although comment will be made relative to the results obtained from the uniqueness rescaling and principal components procedures where appropriate.

The determinant of the correlation matrix was .43034-11. The hypothesis that correlations of the variables in the population differed only randomly from zero when tested by Bartlett's test of sphericity was rejected.

Table 4.15 contains the rotated factor matrix provided by the alpha factor analysis procedure utilizing six revenue variables, twenty-one expenditure variables, and long term debt for the total sample of municipalities. In Table 4.16 is displayed the rotated factor matrix obtained from the image factoring procedure applied to the same data.

The solution obtained using the alpha procedure accounted for 62.3 percent of the total variance; the solution obtained using the image procedure accounted for 61.3 percent of the total variance. Seven factors were extracted using the alpha procedure, and sixteen components were extracted using the image procedure. The solutions provided by the principle components and uniqueness rescaling procedures were very similar to those provided by the alpha and image procedures.

Factor I provided by the alpha solution was associated with two revenue variables, nine expenditure variables, and long term debt. The variables which loaded most heavily on Factor I were revenue from other local taxes, and expenditure for police protection, for fire protection, and for financial administration, and unallocable expenditure. Factor I accounted for 28.4 percent of the factor variance.

TABLE 4.15

ROTATED FACTOR MATRIX, ALPHA PROCEDURE,
FOR SIX REVENUE VARIABLES, TWENTY-ONE EXPENDITURE VARIABLES,
AND LONG TERM DEBT FOR THE TOTAL SAMPLE
(221 MUNICIPALITIES) FOR 1967
(DATA STANDARDIZED ON POPULATION)

Variable	Factors I	II	III	IV	V	VI	VII	H^2
Revenue from:								
1. State	.173	.901	−.085	.182	.072	.126	.076	.882
2. Intergovernmental	.117	.226	−.091	.120	.473	.102	.033	.525
3. Property taxes	.245	.571	−.018	.025	.036	.391	.069	.590
4. Other local taxes	.682	.007	.209	.200	−.017	.017	.085	.639
5. Other local sources	.409	.028	.296	.515	.333	−.014	.016	.718
6. Utilities	.165	.033	.901	.059	−.024	.058	.071	.877
Expenditures for:								
1. Total general expenditures	.471	.730	.094	.234	.375	.153	.169	.990
2. General expenditures less capital outlay	.518	.726	.101	.319	.096	.206	.105	.988
3. Education	−.021	.914	.083	−.081	.250	.038	.010	.956
4. Education less capital outlay	−.008	.899	.088	−.031	.172	.073	.068	.946
5. Highways less capital outlay	.119	.219	−.069	−.026	−.033	.698	.136	.557
6. Public welfare	.216	.338	−.068	.581	−.224	−.121	.066	.706
7. Hospitals less capital outlay	.028	−.010	.199	.787	.107	.028	−.064	.740
8. Health	.279	.349	−.033	.136	−.038	−.205	−.085	.303
9. Police protection	.869	.212	.010	.095	.069	.249	.111	.858
10. Fire protection	.758	.319	.014	.065	.171	.052	.007	.748
11. Sewerage less capital outlay	.186	.018	.105	−.010	.038	.426	.042	.235
12. Sanitation less sewerage	.451	.044	.096	.055	.049	.033	.077	.250
13. Parks and recreation	.521	.213	.172	−.081	.143	.158	.108	.499
14. Libraries	.309	.373	.135	−.044	.158	.031	.056	.348
15. Financial administration	.720	.047	.157	−.008	−.003	.183	.105	.625
16. General control	.259	.181	.028	.075	−.030	.306	.556	.421
17. General public buildings	.125	.026	.070	−.050	.123	.037	.575	.342
18. Unallocable less capital outlay	.691	.092	−.084	.113	.070	.161	.119	.645
19. Interest on public debt	.531	.336	.312	.072	.302	−.174	.017	.765
20. Utilities less capital outlay	.098	.023	.900	.139	−.069	.085	.044	.878
21. Capital outlay	.175	.386	.080	−.096	.742	−.102	.177	.927
Long term debt	.477	.150	.591	.136	.305	−.157	.037	.796
Factor variance	4.957	4.843	2.410	1.595	1.492	1.301	.838	
% of factor variance	28.4	27.8	13.8	9.1	8.6	7.5	4.8	
% of total variance = 62.3								

TABLE 4.16

ROTATED COMPONENT MATRIX, IMAGE PROCEDURE, FOR SIX REVENUE VARIABLES, TWENTY-ONE EXPENDITURE VARIABLES, AND LONG TERM DEBT FOR THE TOTAL SAMPLE (221 MUNICIPALITIES) FOR 1967 (DATA STANDARDIZED ON POPULATION

	Components							
Variable	I	II	III	IV	V	VI	VII	VIII
Revenue from:								
1. State	.821	.156	-.051	.040	.160	.298	.118	-.015
2. Intergovernmental	.230	.133	-.045	.081	.081	.043	.587	.033
3. Property taxes	.547	.239	-.021	.037	.368	.073	.001	-.042
4. Other local taxes	-.010	.649	.204	.080	.060	.260	.030	.237
5. Other local sources	.115	.405	.211	.628	-.062	.005	.107	.161
6. Utilities	.041	.157	.895	.110	.051	-.028	-.022	.014
Expenditures for:								
1. Total general expenditures	.747	.462	.099	.191	.150	.157	.281	.089
2. General expenditures less capital outlay	.727	.499	.099	.227	.222	.240	.100	.076
3. Education	.953	-.011	.039	-.036	.027	-.009	.140	.061
4. Education less capital outlay	.942	.006	.048	-.023	.079	.026	.088	.093
5. Highways less capital outlay	.209	.148	-.033	-.037	.603	.015	.063	-.129
6. Public welfare	.209	.173	.002	.251	.025	.700	.013	.009
7. Hospitals less capital outlay	.017	.058	.156	.760	.015	.233	.035	-.035
8. Health	.275	.261	.003	.041	-.099	.249	.032	.016
9. Police protection	.198	.819	.043	.068	.257	.151	.099	.020
10. Fire protection	.322	.738	.027	.099	.066	.070	.120	.006
11. Sewerage less capital outlay	.030	.199	.091	.007	.367	-.029	.004	.048
12. Sanitation less sewerage	.062	.450	.095	.084	.052	.012	.030	.009
13. Parks and recreation	.202	.516	.149	-.003	.159	-.018	.105	.050
14. Libraries	.421	.308	.105	.052	.019	-.053	.046	-.028
15. Financial administration	.051	.696	.173	.036	.191	.016	.001	-.007
16. General control	.195	.270	.031	.011	.332	.121	.015	.044
17. General public buildings	.041	.140	.068	.002	.091	-.037	.090	.007
18. Unallocable less capital outlay	.106	.699	-.064	.089	.170	.097	.065	.030
19. Interest on public debt	.370	.482	.230	.096	-.139	.024	.156	.480
20. Utilities less capital outlay	.017	.094	.900	.132	.069	.034	-.047	.018
21. Capital outlay	.432	.166	.078	.007	-.134	-.120	.536	.111
Long Term Debt	.181	.437	.552	.146	-.114	.034	.183	.399
Factor variance	4.862	4.639	2.207	1.237	1.103	.928	.892	.541
% of factor variance	27.5	26.3	12.5	7.0	6.2	5.3	5.1	3.1
% of total variance =	63.1							

TABLE 4.16 (cont.)

Variable	Components IX	X	XI	XII	XIII	XIV	XV	XVI
Revenue from:								
1. State	.039	.144	-.034	.047	-.005	.061	-.007	-.007
2. Intergovernmental	.091	.011	.001	.001	-.000	-.000	.000	-.000
3. Property taxes	.057	.111	-.044	.137	.017	.115	-.003	-.002
4. Other local taxes	.056	-.021	.012	-.097	-.005	-.029	-.024	-.014
5. Other local sources	.077	.069	-.026	.019	-.006	-.039	-.025	.032
6. Utilities	.070	.004	.017	-.004	.008	-.020	.009	.002
Expenditures for:								
1. Total general expenditure	.154	.100	.025	-.005	-.025	-.017	-.002	.011
2. General expenditures less capital outlay	.071	-.121	.023	-.013	-.028	-.026	.003	.013
3. Education	.033	.059	.008	-.041	-.024	-.035	.007	.002
4. Education less capital outlay	.036	-.122	.025	-.041	-.028	-.037	-.000	.003
5. Highways less capital outlay	.111	-.137	.019	-.000	.020	-.016	.076	-.002
6. Public welfare	-.012	-.036	-.008	-.015	-.003	.002	.001	.001
7. Hospitals less capital outlay	-.035	-.030	.013	-.004	.005	.022	.012	-.017
8. Health	-.078	.020	.023	.164	.002	-.004	.000	.003
9. Police protection	.105	.064	.041	.033	-.012	.034	-.033	-.015
10. Fire protection	.059	.093	.064	.075	-.068	-.001	-.061	.057
11. Sewerage less capital outlay	.047	.066	-.001	-.012	-.013	-.008	-.063	.009
12. Sanitation less sewerage	.062	-.051	.019	-.013	.036	.009	.018	-.056
13. Parks and recreation	.130	.152	.218	.028	.004	-.007	-.001	.003
14. Libraries	.066	.058	.033	.021	.113	.002	.007	-.010
15. Financial administration	.094	.001	-.075	-.002	.064	.015	.068	-.022
16. General control	.348	-.016	-.008	-.044	-.021	.064	.041	-.039
17. General public buildings	.458	.035	.006	.004	.005	-.011	-.008	.008
18. Unallocable less capital outlay	.104	.004	-.132	.036	-.063	-.013	-.009	.094
19. Interest on public debt	.056	.100	.008	.015	-.002	-.006	-.001	.003
20. Utilities less capital outlay	.041	.019	-.004	.003	-.001	.014	-.011	-.004
21. Capital outlay	.246	.536	.029	.013	.005	.002	-.002	.002
Long Term Debt	.055	.018	.010	-.004	-.004	.019	.004	-.002
Factor variance	.539	.449	.086	.073	.031	.031	.023	.020
% of factor variance	3.1	2.5	0.5	0.4	0.2	0.2	0.1	0.1

Component I extracted by the image procedure accounted for 27.5 percent of the factor variance. It was very similar to Factor II extracted using the alpha procedure. Revenue from state sources and from local property taxes were associated with this component, as were total general expenditures, general expenditures exclusive of capital outlay, expenditure for education, expenditure for education exclusive of capital outlay, expenditure for libraries, and expenditure for capital outlay.

Factor II extracted by the alpha procedure was very similar to Component I extracted by the image procedure. Conversely, Component II extracted by the image procedure was very similar to Factor I from the alpha procedure. Factor II accounted for 27.8 percent of the factor variance in the alpha solution; Component II accounted for 26.3 percent of the factor variance in the image solution.

Factor III from the alpha procedure and Component III from the image procedure were virtually identical. The variables associated with this factor were revenue from utilities, expenditure for utilities, and long term debt. Factor III accounted for 13.8 percent of the factor variance. Component III accounted for 12.5 percent of the factor variance.

Factor IV from the alpha procedure accounted for 9.1 percent of the factor variance, and Component IV from the image procedure accounted for 7 percent of the factor variance. Factor IV and Component IV were very similar. Revenue from other local sources and expenditure for hospitals were associated with this factor in both solutions. Expenditure for public welfare also was associated with Factor IV in the alpha solution.

Factor V from the alpha procedure was associated with revenue from other governmental sources, and with expenditure for capital outlay. Component V from the image procedure was associated with expenditure for highways. Factor VI from the alpha procedure was associated with expenditure for highways and expenditure for sewerage. Component VI from the image procedure was associated with expenditure for public welfare. Factor VII from the alpha procedure was associated with expenditure for general control and expenditure for general public buildings. Component VII obtained from the image procedure was associated with revenue from other governmental sources and expenditure for capital outlay.

Component VIII was associated with interest on public debt; Component IX was associated with expenditure for general public buildings; and Component X was associated with expenditure for capital outlay. The remaining components did not lend themselves to interpretation.

The relatively small amount of total variance accounted for by the two factoring procedures suggests that considerable uniqueness existed among these twenty-eight variables. The estimates of communality shown in Table 4.15 also indicated considerable uniqueness, as well as suggesting that a number of the variables have little in common and that a few of the variables have much in common.

Analyses of Variance

Separate multivariate analyses of variance were conducted for the revenue

data and for the expenditure data. The results of these analyses are reported in this section.

Revenue Data

Table 4.17 displays the a priori planned order of comparisons between the categories on revenue data for 1967. However, examination of the descriptive statistics indicated that an hypothesis would be rejected before all planned comparisons could be completed. Consequently, H_1 tested for significant differences between the major urban core city and the minor urban core city categories; H_2 tested for significant differences in all remaining sources of variation.

TABLE 4.17

PLANNED ORDER OF COMPARISONS BETWEEN MUNICIPALITIES ON REVENUE DATA FOR 1967

Design Matrix	Category of Municipality A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2						X	X
Comparison 3					X	X	
Comparison 4				X	X		
Comparison 5			X	X			
Comparison 6		X	X				

In Table 4.18 are displayed the results of the test of H_1 (no significant difference between major urban core city and minor urban core city categories). The multivariate F ratio obtained, 2.087, was significant at the .056 level. The hypothesis was accepted. Univariate and step-down F ratios for the six variables are reported in Table 4.18, but acceptance of the null hypothesis precludes further interpretation.

TABLE 4.18

H_1: A=B (MAJOR URBAN CORE CITY VS. MINOR URBAN CORE CITY) REVENUE DATA FOR 1967

Multivariate F Ratio = 2.087; p = .056; df = 6 and 209

Source of Revenue	Mean Square	Univariate F*	P	Step-down F	P
1. State	43.395	5.723	.018	5.723	.018
2. Intergovernmental	13.923	5.827	.017	3.226	.074
3. Local property tax	31.650	.967	.327	.536	.465
4. Other local taxes	5.022	2.539	.113	1.738	.189
5. Other local sources	1.232	.400	.528	.016	.901
6. Utilities	13.742	.874	.351	1.247	.266

*df = 1 and 214

In Table 4.19 are shown the results of the test of H_2, i.e., no significant difference in all remaining sources of variation. The multivariate F ratio obtained was 2.568 with an associated probability of .0001. Consequently, the hypothesis was rejected. The univariate and step-down F ratios shown in Table 4.19 indicated that the two variables which contributed most to the variation were revenue from other local taxes and revenue from other local sources.

TABLE 4.19

H_2: B=C, C=D, D=E, E=F, F=G (ALL REMAINING SOURCES OF VARIATION) REVENUE DATA FOR 1967

Multivariate F Ratio = 2.568; p = .0001; df = 30 and 482

Source of Revenue	Mean Square	Univariate F*	P	Step-down F	P
1. State	19.968	2.634	.025	2.634	.025
2. Intergovernmental	3.622	1.516	.186	1.308	.262
3. Property taxes	19.408	.593	.705	.618	.687
4. Other local taxes	9.867	4.988	.0003	4.348	.0009
5. Other local sources	22.430	7.284	.0001	4.446	.0008
6. Utilities	52.609	3.347	.006	2.087	.068

*df = 5 and 215

The discriminant function coefficients for the canonical variates included in H_2 are shown in Table 4.20. The results of Bartlett's test for significance of successive comparisons indicated that roots 1-5 were significant at the .0001 level, and that all other roots were not significant.

Two variables, revenue from the state and revenue from other local sources, discriminated best with regard to canonical variate 1. The two variables which were most potent in discriminating with regard to canonical variate 2 were revenue from other local taxes and revenue from the state. Revenue from utilities discriminated best insofar as canonical variate 3 was concerned. Revenue from the state and revenue from local property tax were the variables which discriminated best in canonical variates 4 and 5. It should be noted, however, that the last two variates accounted for less than 4 percent of the canonical variation, and that the first canonical variable accounted for nearly 67 percent of the canonical variation.

By relaxing the restriction concerning further analysis after rejection of a null hypothesis it was possible to complete all of the planned comparisons. In Table 4.21 are displayed the results obtained when all planned comparisons were performed. A multivariate F ratio significant at beyond the .0001 level was obtained when the independent city category and the established suburb category were compared. In all other planned comparisons the F ratios obtained were not statistically significant.

Revenue from the state was the variable which was most useful in discriminating between the major and minor urban core city categories, and between the independent city and established suburb categories. Revenue from

TABLE 4.20

DISCRIMINANT FUNCTION COEFFICIENTS FOR THE CANONICAL VARIATES INCLUDED WITHIN H_2, PERCENTAGE OF CANONICAL VARIATION ATTRIBUTABLE TO EACH COMPARISON, AND SIGNIFICANCE OF SUCCESSIVE COMPARISONS, REVENUE DATA FOR 1967

	Raw Coefficients					Standardized Coefficients				
Source of Revenue	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5
1. State	-.218	-.271	-.012	-.242	.183	-.601	-.746	.034	-.665	.504
2. Intergovernmental	-.003	.397	.206	-.401	-.012	-.004	.613	.318	-.620	-.019
3. Local property tax	.060	.075	-.042	.034	-.209	.345	.428	-.241	.197	-1.197
4. Other local taxes	-.212	.549	.028	.188	.151	-.298	.772	.039	.265	.213
5. Other local sources	-.370	-.129	-.312	.138	-.007	-.649	-.226	-.548	.242	-.012
6. Utilities	-.053	-.087	.238	.024	-.070	-.209	-.346	.944	.094	-.280
% of canonical variation	66.68	18.15	11.41	3.11	.65					
Bartlett's test for significance of successive comparisons:	Roots 1-5 Chi Square = 74.95, df = 30, p = .0001 Roots 2-5 Chi Square = 26.48, df = 20, p = .151 Roots 4-5 Chi Square = 3.05, df = 6, p = .802 Root 5 Chi Square = .53, df = 2, p = .769									

TABLE 4.21

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS AND MULTIVARIATE F RATIOS FOR THE PLANNED COMPARISON, REVENUE DATA FOR 1967

Source of Revenue	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
1. State	.642	.289	−.799	−.509	−.524	.475
2. Intergovernmental	.505	−.220	.150	.405	.350	.402
3. Property taxes	−.260	−.082	.404	.345	.523	−.550
4. Other local taxes	.461	−.626	−.046	.471	−.094	−.083
5. Other local sources	.039	−.515	−.736	−.323	−.498	−.328
6. Utilities	−.346	−.075	−.184	.708	−.611	.898
Multivariate F ratio	2.087	1.782	6.212	.610	1.543	1.133
df	6&209	6&209	6&209	6&209	6&209	6&209
p	.056	.104	.0001	.723	.166	.344

other local taxes was the variable which best discriminated between the minor urban core city and independent city categories. In the remaining comparisons—established vs. developing suburb, developing suburb vs. small city, and small city vs. small town—revenue from utilities was the variable which best discriminated between categories.

TABLE 4.22

PLANNED ORDER OF COMPARISONS BETWEEN CATEGORIES, EXPENDITURE DATA FOR 1967

Design Matrix	Category of Municipality A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2						X	X
Comparison 3					X	X	
Comparison 4				X	X		
Comparison 5			X	X			
Comparison 6		X	X				

Expenditure Data

The a priori planned order of comparisons between categories on expenditure data for 1967 is shown in Table 4.22. However, examination of the means and standard deviations indicated that an hypothesis would be rejected prior to completion of all planned comparisons. Consequently, H_1 compared the major and minor urban core city categories; H_2 compared all remaining sources of variation.

In Table 4.23 are displayed the results of the test of H_1, i.e., no significant difference between the major urban core city and minor urban core city

TABLE 4.23

H_1: A=B (MAJOR URBAN CORE CITY VS. MINOR URBAN CORE CITY) EXPENDITURE DATA FOR 1967

Multivariate F Ratio = 2.3981; p = .0008; df = 22 and 193

Purpose of Expenditure	Mean Square	Univariate F*	P	Step-down F	P
1. Total general expenditures	277.331	5.098	.025	5.098	.025
2. General expenditures less capital outlay	207.393	5.704	.018	.605	.438
3. Education	71.505	3.478	.064	.092	.762
4. Education less capital outlay	71.765	6.123	.014	2.750	.099
5. Highways less capital outlay	.006	.027	.869	1.693	.195
6. Public welfare	2.393	2.796	.096	.471	.493
7. Hospitals less capital outlay	.295	.201	.655	.140	.709
8. Health	.126	4.595	.033	2.325	.129
9. Police protection	2.068	5.904	.016	8.455	.004
10. Fire protection	.001	.002	.963	6.852	.010
11. Sewerage less capital outlay	.035	.414	.521	1.072	.302
12. Sanitation less sewerage	.359	.928	.337	.051	.821
13. Parks and recreation	1.722	8.273	.005	8.083	.005
14. Libraries	.068	1.132	.289	.148	.701
15. Financial administration	.019	.951	.331	7.183	.008
16. General control	.014	.175	.676	.524	.470
17. General public buildings	.040	.170	.681	1.499	.222
18. Unallocable less capital outlay	.213	.194	.661	.453	.502
19. Interest on public debt	.144	1.352	.246	.416	.520
20. Utilities less capital outlay	2.800	.289	.592	.907	.342
21. Capital outlay	8.403	.984	.322	1.292	.257
Long Term Debt	32.434	.119	.731	.016	.901

*df = 1 and 214

categories. The multivariate F ratio obtained, 2.398, was significant at the .0008 level. Thus, the hypothesis was accepted at the .0001 level but rejected at the .001 level. Examination of the univariate and step-down F ratios reported in Table 4.23 indicated that the expenditure components which contributed most to the variation were expenditure for police protection, for fire protection, for parks and recreation, and for financial administration.

The results of the test of H_2 (no significant difference in all remaining sources of variation) are shown in Table 4.24. The multivariate F ratio obtained, 3.357, was significant at the .0001 level. The hypothesis was rejected. Examination of the univariate and step-down F ratios reported in Table 4.24 indicated that the

TABLE 4.24

H_2: B=C, C=D, D=E, E=F, F=G, (ALL REMAINING SOURCES OF VARIATION) EXPENDITURE DATA FOR 1967

Multivariate F Ratio = 3.357; p = .0001; df = 110 and 955

Purpose of Expenditure	Mean Square	Univariate F*	P	Step-down F	P
1. Total general expenditures	471.593	8.670	.0001	8.670	.0001
2. General expenditures less capital outlay	265.208	7.294	.0001	.092	.994
3. Education	79.879	3.886	.002	2.286	.047
4. Education less capital outlay	42.813	3.653	.004	.216	.956
5. Highways less capital outlay	.854	3.713	.003	12.940	.0001
6. Public welfare	1.820	2.126	.064	1.220	.301
7. Hospitals less capital outlay	1.733	1.181	.320	3.434	.005
8. Health	.227	8.262	.0001	2.797	.018
9. Police protection	2.341	6.684	.0001	2.279	.048
10. Fire protection	6.374	23.259	.0001	9.366	.0001
11. Sewerage less capital outlay	.030	.347	.884	.382	.861
12. Sanitation less sewerage	.763	1.974	.084	.798	.553
13. Parks and recreation	1.294	6.220	.0001	1.637	.152
14. Libraries	.230	3.815	.003	.806	.547
15. Financial administration	.046	2.240	.052	.241	.944
16. General control	.120	1.545	.177	6.666	.0001
17. General public buildings	.175	.743	.592	1.422	.218
18. Unallocable less capital outlay	3.123	2.850	.016	4.278	.001
19. Interest on public debt	1.357	12.725	.0001	1.867	.102
20. Utilities less capital outlay	26.711	2.754	.020	2.882	.016
21. Capital outlay	53.038	6.211	.0001	2.732	.021
Long term debt	3448.143	12.635	.0001	3.619	.004

*df = 5 and 214

variables which contributed most to the variation were total general expenditure; expenditure for highways, for hospitals, for fire protection, and for general control; unallocable expenditures; and long term debt.

In Table 4.25 are reported the discriminant function coefficients for the canonical variates included in H_2. Application of Bartlett's test for significance of successive comparisons indicated that roots 1-5 were significant at the .0001 level, and that all other roots were not significant.

Examination of the standardized discriminant function coefficients indicated that the variable which best discriminated in canonical variates 1, 2, and 4 was total general expenditures exclusive of capital outlay. Long term debt best discriminated with regard to canonical variate 3. In canonical variate 5, total general expenditures was the most useful discriminator. It should be noted that canonical variate 1 accounted for nearly 81 percent of the canonical variation, and that the last three variates accounted for only about 9 percent of the canonical variation.

The restriction with regard to further analysis after rejection of a null hypothesis was relaxed at this juncture, and all planned comparisons were completed. The results are shown in Table 4.26. Multivariate F ratios statistically significant at beyond the .0001 level were obtained in the comparisons of the minor urban core city and independent city categories; the independent city and established suburb categories, and the small city and small town categories. In the other two comparisons—established vs. developing suburb categories and developing suburb vs. small city categories—the multivariate F ratios obtained were not statistically significant.

Two variables—total general expenditures and general expenditures exclusive of capital outlay—consistently were the most useful in distinguishing between the categories which were compared. General expenditures exclusive of capital outlay was the best discriminator in the comparisons involving the major and minor urban core city categories, the minor urban core city and independent city categories, the independent city and established suburb categories, and the small city and small town categories. In the other two comparisons (which did not reveal statistically significant differences), total general expenditures was the most useful discriminator.

Changes from 1962-1967

In this section similarities and differences observed in the results obtained from analyses of the data for municipalities for the years 1962 and 1967 will be noted. Comment will be made regarding changes in the mean revenues and expenditures, changes observed in the factor analytic solutions obtained, and changes noted in the results obtained from multivariate analyses of variance of the revenue and expenditure variables.

Mean Revenue and Expenditure

No change was noted when the six revenue variables were ranked in terms of their importance as measured by per capita revenue from each source. Revenue from local property taxes was the most important source in both 1962 and 1967 and was followed in importance by revenue from utilities during each of these

TABLE 4.25

DISCRIMINANT FUNCTION COEFFICIENTS FOR THE CANONICAL VARIATES INCLUDED WITHIN H_2, PERCENTAGE OF CANONICAL VARIATION ATTRIBUTABLE TO EACH COMPARISON, AND SIGNIFICANCE OF SUCCESSIVE COMPARISONS' EXPENDING DATA FOR 1967

	Raw Coefficients					Standardized Coefficients				
Purpose of Expenditure	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5
1. Total general expenditures	.179	.299	.063	−.438	.341	1.318	2.209	.462	−3.233	2.518
2. General expenditures less capital outlay	−.412	−.380	.059	.613	−.026	−2.482	−2.292	.355	3.694	−.160
3. Education	.175	−.071	−.122	−.195	−.347	.793	−.324	−.552	−.885	−1.572
4. Education less capital outlay	.018	.067	−.033	.072	−.056	.063	.231	−.112	.246	−.190
5. Highways less capital outlay	1.106	−.455	−.320	−1.347	.380	.531	−.218	−.154	−.646	.182
6. Public welfare	.019	−.133	−.234	−.554	.047	.018	−.123	−.217	−.513	.044
7. Hospitals less capital outlay	.378	.093	−.496	.032	−.703	.459	.112	−.600	.038	−.852
8. Health	−1.407	−.185	−1.322	−.626	−.335	−.233	−.031	−.219	−.104	−.056
9. Police protection	.784	1.388	.503	.097	−1.294	.464	.822	.298	.057	−.766
10. Fire protection	−1.909	−.566	.419	−.015	−.136	−.999	−.296	.219	−.008	−.071
11. Sewerage less capital outlay	.418	−.521	−.109	.743	−.412	.122	−.152	−.032	.217	−.121
12. Sanitation less sewerage	.230	.234	.122	−.392	−.686	.174	.146	.076	−.244	−.426
13. Parks and recreation	−.201	.716	−1.048	.254	.101	−.092	.327	−.478	.116	.046
14. Libraries	.062	−.770	.259	.995	−.288	.015	−.189	.064	.245	−.071
15. Financial administration	.292	−.924	−.020	−.656	.911	.042	−.132	−.003	−.094	.130
16. General control	2.298	.428	−.905	1.053	−1.176	.641	.119	−.252	.294	−.328
17. General public buildings	−.210	−.760	.207	−.003	−.572	−.102	−.368	.101	−.001	−.277

TABLE 4.25 (cont.)

Purpose of Expenditure	Raw Coefficients					Standardized Coefficients				
	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5
18. Unallocable less capital outlay	.487	.072	−.453	−.357	−.496	.509	.075	−.474	−.373	−.520
19. Interest on public debt	.454	2.215	2.315	−.546	−.298	.148	.723	.756	−.178	−.097
20. Utilities capital outlay	.018	−.124	.296	−.121	−.085	.057	−.386	.921	−.376	−.264
21. Capital outlay Long term debt	−.286	−.372	−.021	.447	−.116	−.836	−1.086	−.060	1.3[illegible]	−.339
	−.026	−.009	−.073	−.024	.011	−.430	−.152	−1.198	−.399	.185
% of canonical variation	80.92	10.03	5.12	2.12	1.82					

Bartlett's test for significance of successive comparisons:
Roots 1-5 Chi Square = 329.88, df = 110, p = .0001
Roots 2-5 Chi Square = 94.99, df = 84, p = .194
Roots 3-5 Chi Square = 46.79, df = 60, p = .894
Roots 4-5 Chi Square = 20.77, df = 38, p = .990
Root 5 Chi Square = 9.611, df = 18, p = .944

TABLE 4.26

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS AND MULTIVARIATE F RATIOS FOR THE PLANNED COMPARISONS, EXPENDITURE DATA FOR 1967

Purpose of Expenditure	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
1. Total general expenditure	-1.086	.190	2.580	1.375	-5.446	1.997
2. General expenditures less capitel outlay	1.293	-1.308	-3.148	-.013	4.047	-3.811
3. Education	-.912	.718	.392	-.785	.367	1.032
4. Education less capital outlay	.972	.246	.093	-.219	.152	.208
5. Highways less capital outlay	-.340	.520	.349	.134	-.330	.567
6. Public welfare	-.030	.075	-.128	.099	.026	.169
7. Hospitals less capital outlay	-.042	.427	.334	-.906	-.067	.638
8. Health	.200	-.151	-.282	-.084	.083	-.126
9. Police protection	1.276	.529	.629	-.312	.285	.776
10. Fire protection	-.799	-1.080	-1.012	.447	.830	-1.001
11. Sewerage less capital outlay	-.214	.098	.090	-.163	-.012	-.006
12. Sanitation less sewerage	.056	.144	.171	-.072	.157	.306
13. Parks and recreation	.494	-.075	-.092	-.452	-.235	.120
14. Libraries	.005	-.073	-.005	-.0044	.095	-.411
15. Financial administration	-.595	-.096	.017	.063	-.160	-.035
16. General control	-.087	.559	.615	-.626	-.357	.579
17. General public buildings	-.224	-.017	-.166	.074	.294	-.241
18. Unallocable less capital outlay	-.199	.442	.355	-.440	-.029	.810
19. Interest on public debt	-.133	-.185	.392	.475	.316	.395
20. Utilities less capital outlay	-.140	.148	.077	.856	.641	-.134
21. Capital outlay	.620	-.266	-1.275	-.107	1.929	-1.258
Long term debt	-.035	-.317	-.680	-.578	-.383	-.131
Multivariete F ratio	2.398	6.218	9.293	.803	1.255	2.990
df	22&193	22&193	22&193	22&193	22&193	22&193
p	.0008	.0001	.0001	.720	.207	.0001

two years. The largest amount of revenue per capita from property taxes was obtained in the large urban city category in both years; the smallest amount was obtained in the small town category in 1962, and in the small city category in 1967. Mean revenue per capita from property tax for the total sample increased from $37 to $52—an increase of 41 percent between 1962 and 1967.

Revenue per capita from utilities for the total sample increased from $24 to $32—an increase of 33 percent between 1962 and 1967. Mean revenue per capita from utilities was highest in the small city category in both 1962 and 1967 and was lowest in the developing suburb category in both 1962 and 1967.

Revenue from other local sources was the third ranking revenue source in both 1962 and 1967. It increased from $18 to $24 per capita between 1962 and 1967—a 33 percent increase. Revenue from other local sources was highest in the independent city category in both 1962 and 1967. Revenue from other local sources was lowest in the developing suburb category in both 1962 and 1967.

Mean revenue per capita from the state for the total sample increased from $11 to $16 over this period, an increase of 45 percent. Mean revenue per capita from the state was highest in the independent city category in 1962 and in the major urban core city category in 1967. It was lowest in the developing suburb category and in the small town category in both years.

Revenue from other local taxes ranked fifth as a source of revenue in both 1962 and 1967. Mean revenue from other local taxes for the total sample increased from $6 to $8 per capita, an increase of 33 percent between 1962 and 1967. Revenue from this source was highest in the large urban city category in both 1962 and 1967. Revenue from this source was lowest in the established suburb category in 1962, and in the established suburb and developing suburb categories in 1967.

Revenue from other governmental agencies ranked as the least important revenue source in both 1962 and 1967. However, mean revenue per capita from other governmental agencies for the total sample increased from $3 per capita in 1962 to $7 per capita in 1967—an increase of 133 percent. In both 1962 and 1967 the large urban core city was highest in revenue from this source. The developing suburb category was low in 1962; the small town category was low in 1967.

The mean total general expenditure for the entire sample increased from $83 per capita in 1962 to $107 per capita in 1967—an increase of 29 percent over this period. The highest mean total expenditure occurred in the large urban core city category in both 1962 and 1967. The lowest per capita total expenditure occurred in the developing suburb category in both 1962 and 1967.

Mean per capita general expenditure exclusive of capital outlay for the entire sample increased from $63 per capita to $80 per capita between 1962 and 1967. This represented an increase of 27 percent. The large urban core city category had the highest per capita expenditure in each of the two years; the developing suburb category had the lowest per capita expenditure in each of the two years.

Expenditures for education are difficult to interpret since only expenditures for education by fiscally dependent school districts are reported as a municipal expenditure. Thus, expenditures for education made by fiscally independent school districts are not reported as a municipal expenditure in the *Census of Governments*.

Most expenditure categories showed relatively little change from 1962 to 1967. In most instances, the municipal category which reported the highest expenditures for a given function in 1962 also reported the highest expenditure per capita for that function in 1967. Expenditures for certain purposes consistently were highest in the three large city categories. Among them were expenditure for welfare, for police protection, for fire protection, for sanitation, for parks and recreation, for interest on debt, and for capital outlay. Only in expenditure per capita for highways did the small town and suburb categories tend to be consistently higher than the city categories. In most of the expenditure categories the established suburb, developing suburb, and small town categories tended to have lower per capita expenditures than did the cities.

Factor Analyses

The factors obtained from application of the alpha factoring procedure to the

revenue, expenditure, and long term debt variables for 1962 and 1967 were very similar. Factor I obtained from the 1962 data was virtually identical to Factor II obtained from the 1967 data. Conversely, Factor II obtained from the 1962 data was very similar to Factor I obtained from the 1967 data. The first two factors extracted accounted for about 46 percent of the factor variance for the 1962 data and for about 56 percent of the factor variance for the 1967 data. Factors III through VIII differed rather substantially from 1962 to 1967, and the order in which similar factors were extracted also varied. For example, the Factor VII extracted from the 1962 data was quite similar to the Factor IV extracted from the 1967 data.

Application of the image factoring procedure to the data for 1962 and for 1967 produced similar results. Component I identified from the 1962 data was very similar to Component I identified from 1967 data. Both Component II and Component III were very similar in each of the two years. The first three components accounted for approximately 59 percent of the factor variance in 1962 data, and for over 66 percent of the factor variance in 1967 data. The remaining components extracted in each of the two years were not comparable and were difficult to interpret.

Analyses of Variance

In both 1962 and 1967 the hypothesis of no significant difference between the major urban core city and the minor urban core city categories on sources of revenue was accepted. The hypothesis of no significant difference in all remaining sources of variation was rejected in both 1962 and 1967. Revenue per capita from other local taxes contributed most to the significant difference which was found in 1962, although all variables contributed rather substantially to the difference. In 1967, revenue per capita from other local taxes and revenue per capita from other local sources were the two variables which contributed most to the significant difference which was found.

The variable which best discriminated with regard to canonical variate 1 in 1962 was revenue per capita from local property tax. In 1967, revenue per capita from other local sources and revenue per capita from the state were the variables which best discriminated in this canonical variate. Revenue per capita from the state and revenue per capita from utilities were the best discriminators in canonical variate 2 in 1962; revenue per capita from other local taxes and revenue per capita from the state best discriminated in this variate in 1967. With regard to canonical variate 3, revenue per capita from the state was the most useful discriminator in 1962; but in 1967, revenue per capita from utilities best discriminated with regard to this variate. In canonical variate 4, revenue per capita from local property tax discriminated best in 1962. In 1967, revenue per capita from the state and revenue per capita from other governmental sources best discriminated with regard to canonical variate 4. Revenue per capita from other governmental sources best discriminated in canonical variate 5 in 1962, and revenue per capita from the state best discriminated in 1967.

When all planned comparisons were made, a difference statistically significant at beyond the .0001 level was found between the independent city and established suburb categories in both 1962 and 1967. A difference statistically significant at beyond the .01 level was found between the small city and small

town categories in 1962, but in 1967 the difference between them was not statistically significant. In 1962 a difference statistically significant at beyond the .05 level was found between the major and minor urban core city categories, and between the minor urban core city and independent city categories; in 1967 the differences were not statistically significant in the comparisons involving these categories. In the two remaining comparisons—established vs. developing suburb and developing suburb vs. small city—the differences were not statistically significant in either 1962 or 1967.

The variable which best discriminated between the major and minor urban core city categories in 1962 was revenue from other local taxes, and in 1967 was revenue from the state. Revenue from proprty taxes was the variable most useful in discriminating between the minor urban core city and independent city categories in 1962; in 1967 the most useful discriminator was revenue from other local taxes. The independent city and established suburb categories were best discriminated by revenue from property tax and revenue from other local sources in 1962, while in 1967 these categories were best discriminated by revenue from the state and revenue from other local sources. The established and developing suburb categories were best discriminated by revenue from other local taxes in 1962 and by revenue from utilities in 1967. The developing suburb and small city categories were best discriminated by revenue from utilities in both 1962 and 1967, as were the small city and small town categories in both years. These results indicated that, on a per capita basis, differences between the categories with regard to their sources of revenue diminished between 1962 and 1967.

The hypothesis of no significant differences between the major urban core city and minor urban core city categories with regard to purposes of expenditure was rejected at the .05 level of significance in 1962 and at the .001 level of significance in 1967. It was apparent that differences between the two categories had increased between 1962 and 1967. The hypothesis of no significant difference in all remaining sources of variation was rejected at the .0001 level for both 1962 and 1967. The expenditures which contributed most to the significant differences found in 1962 were total general expenditures; expenditure for highways, for health, and for fire protection; unallocable expenditures; and expenditure for capital outlay. The variables which contributed most to the significant differences found in 1967 were total general expenditures and expenditure for highways, for fire protection, and for general control.

The variable which best discriminated with regard to canonical variates 1 and 2 was general expenditures exclusive of capital outlay in both 1962 and 1967. In 1962, general expenditures exclusive of capital outlay best discriminated with regard to canonical variate 3. In 1967, long term debt was the variable which best discriminated in this canonical variate. Expenditure for education best discriminated with regard to canonical variate 4 in 1962, with total general expenditures also a useful discriminator. In 1967, general expenditures exclusive of capital outlay and total general expenditures best discriminated in this canonical variate. Expenditure for education best discriminated with regard to canonical variate 5 in 1962, and total general expenditures best discriminated with regard to this variate in 1967.

When all of the planned comparisons between categories were made, it was found that differences between the minor urban core city and independent city categories, between the independent city and established suburb categories, and between the small city and small town categories were statistically significant at beyond the .0001 level in both 1962 and 1967. The difference between the major and minor urban core city categories was statistically significant at beyond the .05 level in 1962, and at beyond the .001 level in 1967. The differences between the established and developing suburb categories and between the established suburb and small town categories were not statistically significant in either 1962 or 1967.

General expenditures exclusive of capital outlay was the variable which discriminated most effectively between the minor urban core city and independent city categories, the independent city and established suburb categories, and the small city and small town categories in both 1962 and 1967. Expenditure for education exclusive of capital outlay was the most useful discriminator between the major and minor urban core city categories in 1962; general expenditure exclusive of capital outlay was the most useful in 1967. In the comparisons of the established and developing suburb categories, the best discriminator in 1962 was expenditure for education and in 1967 was total general expenditures. General expenditures exclusive of capital outlay was the most useful discriminator between the developing suburb and small city categories in 1962. In 1967, the most useful discriminator between these two categories was total general expenditures.

CHAPTER V

ANALYSES OF DATA: COUNTIES

In this chapter are reported the results of the analyses of the data concerning revenues, expenditures, and long term debt of the 221 counties which were identified as being most closely associated with each school district in the sample. The counties were categorized in the same manner as the school districts with which they were associated. Thus, Category A consists of counties associated with major urban core cities; Category B consists of counties associated with minor urban core cities; Category C consists of counties associated with independent cities; Category D consists of counties associated with established suburbs; Category E consists of counties associated with developing suburbs; Category F consists of counties associated with small cities; and Category G consists of counties associated with small towns.

Data concerning revenues, expenditures, and long term debt of these counties were obtained from the *1962 Census of Governments* and from the *1967 Census of Governments*. The data were standardized on a per capita basis using population estimates obtained from *Sales Management's* "Survey of Buying Power." Three sources of revenue (intergovernmental revenue, tax revenue, and revenue from charges and miscellaneous) and seventeen expenditure categories are reported for counties in the Census of Governments. For purposes of this study, the category "expenditure for natural resources" was combined with the category of "expenditure for parks and recreation". Both expenditure for education and expenditure for education exclusive of capital outlay were included in the analysis. It should be noted, however, that in states where school districts are organized on a county-unit basis, the expenditure for education reported by the county is likely to include expenditure for the operation of the county school system. In states where a county-unit school system does not prevail, the expenditure for education reported by a county generally is nominal. Consequently, the expenditure for education by counties must be viewed with this shortcoming of the data in mind. As was the case in the analysis of data for municipalities, capital outlay was treated as a single expenditure category.

The same statistical procedures employed in analyses of the data for school districts and for municipalities were employed in the analyses of data for counties. Although four factoring procedures were employed, only the results obtained from the alpha and image procedures will be reported. A weight of .40 was chosen arbitrarily as the criterion for determining whether or not a variable was associated with a given factor.

Separate multivariate analyses of variance were applied to the sets of revenue and expenditure variables (including long term debt). However, since data were available for only three revenue variables, it was recognized that the information which could be gained from multivariate analyses of variance of revenue sources might add relatively little additional information with regard to differences between the categories of counties.

In the final section of the chapter, comment will be made regarding changes which occurred between 1962 and 1967. While such changes do not establish a trend, they may be indicative of future developments.

Analyses of Data for 1962

In this section descriptive statistics with regard to the sample will first be reported and will be followed by the results obtained from factor analyses. Results obtained from the multivariate analyses of variance will then be reported.

Mean Revenue and Expenditure

In Table 5.1 are shown the means and standard deviations of the three revenue variables, sixteen expenditure variables, and long term debt for the total sample of counties, and for each category of county. Revenue from taxes levied by the county ranked as the leading source of revenue for the total sample, as well as for each of the seven categories. Revenue from taxes ranged from a high of $34 per capita in counties associated with small towns to a low of $19 per capita in counties associated with small cities. Revenue from intergovernmental sources was the second ranking source of revenue for the total sample of counties, and for each of the seven categories. Revenue from intergovernmental sources ranged from a high of $26 per capita in the established suburb category to a low of $9 per capita in the large urban core city category. Revenue from other local sources (fees and miscellaneous charges) ranged from $9 per capita in the small town category to $5 per capita in the minor urban core city, established suburb and developing suburb categories.

The mean total expenditure for the entire sample of counties was $53 per capita. Mean total expenditure ranged from a high of $69 per capita in counties associated with small towns to a low of $37 per capita in counties associated with minor urban core cities. The mean general expenditure exclusive of capital outlay for the entire sample of counties was $41 per capita, and ranged from a high of $49 per capita in the independent city category to a low of $30 per capita in the minor urban core city category.

The largest item of expenditure for the total sample of counties was expenditure for public welfare with a mean of $15 per capita. Expenditure for public welfare also was the largest item of expenditure in the small town category, the small city category, the developing suburb category, and the minor urban core city category and was one of the largest expenditure items in each of the other three categories. Expenditure for highways, with a mean expenditure of $12 per capita, was the second largest item of expenditure for the total sample of counties and was one of the largest expenditure items in each of the seven categories. Expenditure for capital outlay was the third largest item of expenditure for the total sample ($6 per capita) and was an important item of expenditure in each of the seven categories. The expenditure per capita for most functions did not vary noticeably from one category of county to another.

The mean long term debt for the total sample was $29 per capita. Long term debt ranged from a high of $45 per capita in the established suburb and developing suburb categories to a low of $14 per capita in the small town category.

Factor Analyses

The determinant of the correlation matrix was .33597-11. Application of Bartlett's test of sphericity led to rejection of the hypothesis that the

TABLE 5.1

MEANS AND STANDARD DEVIATIONS OF THREE REVENUE VARIABLES, SIXTEEN EXPENDITURE VARIABLES, AND LONG TERM DEBT FOR THE TOTAL SAMPLE AND BY CATEGORIES, COUNTY DATA FOR 1962 (DATA STANDARDIZED ON POPULATION)

Variable	Category A		Category B		Category C		Category D		Category E		Category F		Category G		All Districts	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Revenue from:																
1. Intergovernmental sources	9	10	14	21	17	16	26	47	25	51	17	18	22	23	20	32
2. Taxes	25	18	28	51	21	9	30	13	28	12	19	9	34	73	26	31
3. Other local sources	7	8	5	5	6	7	5	3	5	3	7	8	9	8	6	6
Expenditure for:																
1. Total general expenditures	43	35	37	10	64	120	55	22	52	25	44	26	69	102	53	66
2. General expenditures less capital outlay	34	29	30	19	49	77	45	19	44	22	36	21	46	28	41	37
3. Education	1	3	2	3	3	5	3	4	3	4	2	4	2	5	2	4
4. Education less capital outlay	1	3	1	3	2	5	3	4	3	4	2	4	2	4	2	4
5. Highways less capital outlay	6	4	8	5	13	8	13	8	9	6	14	9	20	15	12	10
6. Public welfare	7	11	16	54	11	13	13	10	15	12	18	65	22	72	15	44
7. Hospitals less capital outlay	7	8	4	7	5	8	4	6	4	4	5	8	5	8	5	7
8. Health	1	2	1	1	2	2	2	1	2	2	1	1	2	1	2	2
9. Police protection	3	2	4	9	3	6	5	4	4	3	3	4	3	2	4	5
10. Parks and recreation	3	3	2	2	1	1	2	3	2	2	1	1	1	1	2	2
11. Financial administration	1	1	2	2	1	1	1	1	2	4	1	1	1	1	1	2
12. General control	3	1	3	1	4	4	3	1	3	1	3	1	5	4	4	3
13. General public buildings	2	3	2	2	2	5	1	1	1	2	2	7	1	2	2	4
14. Unallocable less capital outlay	7	11	5	12	2	2	7	9	10	24	2	2	3	5	5	12
15. Interest on public debt	1	1	9	47	0	1	8	38	3	12	0	1	0	0	3	24
16. Capital outlay	8	7	7	7	5	7	8	6	6	5	7	9	5	5	6	7
Long term debt	38	38	36	29	16	16	45	44	46	36	16	21	14	19	29	32
	N=13		N=34		N=35		N=35		N=34		N=35		N=35		N=221	

Category A = Major Urban Core City
Category B = Minor Urban Core City
Category C = Independent City
Category D = Established Suburb
Category E = Developing Suburb
Category F = Small City
Category G = Small Town

correlations of the variables in the population differed only randomly from zero.

The rotated factor matrix obtained by applying the alpha factoring procedure to the three revenue variables, sixteen expenditure variables, and long term debt for the entire sample of counties is shown in Table 5.2. The eight factors identified by application of the alpha procedure accounted for 66.8 percent of the total variance. The estimates of the communality of each variable shown in Table 5.2 indicated that some variables (for example, expenditure for education and expenditure for education exclusive of capital outlay) have much in common with other variables. However, some of the variables (for example, expenditure for financial administration) displayed considerable uniqueness.

In Table 5.3 is displayed the rotated component matrix obtained by applying the image factoring procedure to the same array of variables. The twelve components isolated by application of the image procedure accounted for only 57.4 percent of the total variance.

Factor I identified by the alpha procedure accounted for 15.1 percent of the factor variance. The factor was associated with revenue from intergovernmental sources, with unallocable expenditures, and with expenditure for interest on public debt. Component I identified by the image factoring procedure accounted for 15.5 percent of the factor variance and was associated with total general expenditures, with expenditure for police protection, and with expenditure for general control.

Factor II extracted by the alpha procedure accounted for 15 percent of the factor variance and was very similar to Component I. The variables which loaded on Factor II were total general expenditures and expenditures for police protection and for general control. Component II, which accounted for 15.3 percent of the factor variance was associated with expenditure for education and with expenditure for education exclusive of capital outlay.

Factor III obtained from the alpha procedure accounted for 14 percent of the factor variance and was virtually the same as Component II. Component III extracted by the image procedure accounted for 15.2 percent of the factor variance and was virtually identical to Factor I. Variables which loaded on Component III were revenue from intergovernmental sources, unallocable expenditure, and expenditure for interest on public debt.

Factor IV obtained from the alpha procedure was associated with revenue from other local sources and with expenditure for hospitals. It accounted for 13 percent of the factor variance. Component IV was practically identical to Factor IV and accounted for 12.1 percent of the factor variance.

Factor V, which accounted for 12.8 percent of the factor variance, was associated with expenditure for public welfare and expenditure for highways. Component V accounted for 11.8 percent of the factor variance and was associated with expenditure for public welfare.

Factor VI, which accounted for 11.7 percent of the factor variance, was associated with expenditure for capital outlay, expenditure for general public buildings, and long term debt. Component VI accounted for 9.3 percent of the factor variance and was identical to Factor VI.

Factor VII accounted for 9.9 percent of the factor variance. It was associated with revenue from taxes, expenditure for health, and general expenditures exclusive of capital outlay. Component VII was associated with revenue from

TABLE 5.2

ROTATED FACTOR MATRIX, ALPHA PROCEDURE, FOR THREE REVENUE VARIABLES, SIXTEEN EXPENDITURE VARIABLES, AND LONG TERM DEBT FOR THE TOTAL SAMPLE, COUNTY DATA FOR 1962 (DATA STANDARDIZED ON POPULATION)

Variable	Factor I	II	III	IV	V	VI	VII	VIII	H2
Revenue from:									
1. Intergovernmental sources	.916	.105	.051	.054	.221	-.081	-.130	-.082	.803
2. Taxes	-.025	.071	.106	.193	-.218	.243	.826	-.134	.608
3. Other local sources	-.027	.097	-.097	.737	.059	.024	.060	.089	.749
Expenditure for:									
1. Total general expenditures	.040	.953	.234	.088	.143	.010	-.079	.046	.872
2. General expenditures less capital outlay	.045	.155	.157	.343	.308	.147	-.431	-.085	.389
3. Education	.018	.201	.925	-.058	.052	-.009	-.051	.001	.906
4. Education less capital outlay	.015	.121	.977	-.020	.083	.003	-.013	-.029	.908
5. Highways less capital outlay	.144	.233	.054	.275	.411	.034	.107	-.274	.527
6. Public welfare	-.002	.019	.036	-.012	.748	-.034	-.129	.031	.698

TABLE 5.2 (cont.)

Variable	Factor I	II	III	IV	V	VI	VII	VIII	H2
7. Hospitals less capital outlay	-.019	.076	.000	.921	-.003	-.128	-.050	.305	.772
8. Health	.017	.080	.101	.065	.026	.269	-.561	.031	.464
9. Police protection	-.027	.474	-.028	.128	-.020	.112	-.002	.372	.395
10. Parks and recreation	.017	.056	.037	.258	.143	.032	-.068	.402	.383
11. Financial administration	.004	.025	.008	.282	-.058	.216	.275	-.088	.246
12. General control	-.010	.887	.150	.066	.016	.108	-.005	-.039	.850
13. General public buildings	-.011	.078	-.025	-.033	.011	.555	-.063	.036	.468
14. Unallocable less capital outlay	.816	-.036	.031	-.000	-.074	.140	-.084	.127	.753
15. Interest on public debt	.737	-.033	-.033	-.057	-.039	.029	.122	.040	.528
16. Capital outlay	.128	.050	.042	.031	-.040	.951	.066	.279	.672
Long term debt	.163	.056	-.074	.101	.063	.400	-.082	.702	.575
Factor variance	2.121	2.108	1.968	1.823	1.802	1.644	1.392	1.169	
% of factor variance	15.1	15.0	14.0	13.0	12.8	11.7	9.9	8.3	

% of total variance = 66.8

TABLE 5.3

ROTATED COMPONENT MATRIX, IMAGE PROCEDURE, FOR THREE REVENUE VARIABLES, SIXTEEN EXPENDITURE VARIABLES, AND LONG TERM DEBT FOR THE TOTAL SAMPLE, COUNTY DATA FOR 1967 (DATA STANDARDIZED ON POPULATION)

Variable	Components											
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Revenue from:												
1. Intergovernmental sources	.063	.067	.804	.029	.121	−.052	−.125	−.006	.224	.054	−.028	−.010
2. Taxes	.080	.075	−.034	.047	−.223	.098	.584	−.078	−.034	−.301	.007	.008
3. Other local sources	.088	−.089	−.015	.785	.083	.009	.201	.064	.056	.030	.009	.002
Expenditure for:												
1. Total general expenditures	.840	.256	.030	.080	.085	.025	−.014	.044	.202	.092	−.020	.001
2. General expenditures less capital outlay	.114	.148	.032	.213	.206	.065	−.121	.107	.290	.325	.012	−.009
3. Education	.189	.915	.021	−.048	.057	−.005	−.006	−.010	.028	.063	−.002	−.001
4. Education less capital outlay	.120	.925	.015	−.036	.070	−.005	.031	−.009	.055	.048	−.001	.001
5. Highways less capital outlay	.189	.048	.111	.110	.217	−.020	.091	−.028	.551	−.045	−.005	.002
6. Public welfare	.028	.041	.013	.023	.778	−.024	−.097	.009	.117	.060	−.007	.001
7. Hospitals less capital outlay	.105	.000	−.010	.802	.011	−.029	.068	.208	.082	.041	−.006	−.002
8. Health	.120	.075	.032	.028	.102	.196	−.177	.050	−.063	.509	−.003	.003
9. Police protection	.496	−.015	−.008	.183	.025	.158	.002	.216	−.083	.002	.066	−.006
10. Parks and recreation	.076	.026	.017	.233	.097	.080	−.058	.463	.053	.035	−.035	−.002
11. Financial administration	.016	−.017	.001	.145	−.064	.103	.416	.004	.054	−.023	−.002	−.003
12. General control	.862	.144	−.010	.011	.005	.056	.104	−.037	.140	.091	−.040	.004
13. General public buildings	.062	−.013	.001	−.017	.006	.605	.042	.004	.041	.071	−.019	−.006
14. Unallocable less capital outlay	−.005	.018	.811	.013	−.006	.124	−.000	.068	−.074	.092	−.007	−.009
15. Interest on public debt	−.033	−.031	.688	−.047	−.038	.052	.066	.030	.012	−.069	.027	.015
16. Capital outlay	.081	.039	.122	.005	−.051	.681	.208	.227	−.043	.077	.018	.009
Long term debt	.090	−.009	.152	.079	.091	.406	.020	.495	−.133	.102	.082	.006
Factor variance	1.866	1.848	1.834	1.455	1.419	1.117	.728	.658	.580	.539	.017	.001
% of factor variance	15.5	15.3	15.2	12.1	11.8	9.3	6.0	5.5	4.8	4.5	0.1	0.0

% of total variance = 57.4

taxes and expenditure for financial administration. It accounted for 6.0 percent of the factor variance.

Factor VIII accounted for 8.3 percent of the factor variance and was associated with long term debt and with expenditure for parks and recreation. Component VIII accounted for 5.5 percent of the factor variance and was associated with these same two variables—long term debt and expenditure for parks and recreation.

Component IX was associated with expenditure for highways. Component X was associated with expenditure for health. The remaining two components were not interpreted.

The factor matrices provided by the uniqueness rescaling and principal components factoring procedures were quite similar to those provided by the alpha and image procedures.

Analyses of Variance

The planned order of comparisons of the categories on revenue data is shown in Table 5.4. Examination of the means and standard deviations of the three revenue variables provided some reason for believing that all planned comparisons might be completed without rejection of a null hypothesis, and this proved

TABLE 5.4

PLANNED ORDER OF COMPARISONS BETWEEN CATEGORIES, REVENUE DATA FOR 1962

Design Matrix	A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2		X	X				
Comparison 3			X	X			
Comparison 4				X	X		
Comparison 5					X	X	
Comparison 6						X	X

to be the case. The multivariate F ratio and standardized discriminant function coefficients for each of the planned comparisons is provided in Table 5.5. No statistically significant differences were found when the six planned comparisons were made. That is, no significant difference was found between the major and minor urban core city categories, the minor urban core city and independent city categories, the independent city and established suburb categories, the established and developing suburb categories, the developing suburb and small city categories, or the small city and small town categories. It should be noted, however, that the test of the general mean produced an F ratio significant at the

.0001 level. Hence, it cannot be said that no difference existed between all categories.

TABLE 5.5

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS AND MULTIVARIATE F RATIOS FOR THE PLANNED COMPARISONS, REVENUE DATA FOR 1962

Source of Revenue	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
1. Intergovernmental sources	−.962	.880	−.625	−.325	−.311	−.250
2. Taxes	−.098	−.288	−.722	−.389	−.211	−.815
3. Other local sources	.244	.489	.013	.926	.963	−.350
Multivariate F ratio	.586	.760	.491	1.098	2.446	1.250
df	3&212	3&212	3&212	3&212	3&212	3&212
p	.624	.518	.689	.351	.065	.292

Given the fact that no significant difference was found in any of the planned comparisons, the discriminant function coefficients are of limited utility. However, the variables which differentiated between categories most effectively in each of the six planned comparisons are shown in Table 5.6. Revenue from intergovernmental sources best discriminated in the comparison of the major and minor urban core city categories, and in the comparison of the minor urban core city and independent city categories. Revenue from taxes was the most useful discriminator in the comparisons involving the independent city vs. established suburb and the small city vs. the small town categories. In the comparisons involving the established and developing suburb categories, and the developing suburb and small city categories, revenue from other local sources was the most useful discriminator.

The planned order of comparisons between categories on expenditure data is shown in Table 5.6. Since it did not appear likely that all comparisons could be completed without rejection of an hypothesis, H_1 compared the major urban core city and minor urban core city categories; H_2 compared all remaining sources of variation.

In Table 5.7 are displayed the results of the test of H_1, i.e., no difference between the major urban core city category and the minor urban core city category. A multivariate F ratio of .630 with an associated probability of occurrence of .865 was obtained. Thus, the hypothesis was accepted. The univariate and step-down F ratios shown in Table 5.7 indicated that on none of the variables was a significant difference identified.

In Table 5.8 are displayed the results of the test of H_2, i.e., no significant difference in all remaining sources of variation. A multivariate F ratio of 2.044,

TABLE 5.6

PLANNED ORDER OF COMPARISONS BETWEEN CATEGORIES, EXPENDITURE DATA FOR 1962

Design Matrix	A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2						X	X
Comparison 3					X	X	
Comparison 4				X	X		
Comparison 5			X	X			
Comparison 6		X	X				

TABLE 5.7

H_1: A=B (MAJOR URBAN CORE CITY VS. MINOR URBAN CORE CITY) EXPENDITURE DATA FOR 1962

Multivariate F Ratio = .630; p = .865; df = 17 and 198

Purpose of Expenditure	Mean Square	Univariate F*	P	Step-down F	P
1. Total general expenditures	3.325	.076	.783	.076	.783
2. General expenditures less capital outlay	1.506	.111	.740	.074	.786
3. Education	.004	.023	.881	.095	.759
4. Education less capital outlay	.001	.005	.942	.044	.834
5. Highways less capital outlay	.747	.960	.328	1.716	.192
6. Public welfare	7.468	.371	.543	.287	.593
7. Hospitals less capital outlay	.848	1.748	.188	1.407	.237
8. Health	.009	.399	.529	.105	.746
9. Police protection	.058	.231	.631	1.387	.240
10. Parks and recreation	.112	3.388	.067	2.442	.120
11. Financial administration	.011	.288	.592	.232	.630
12. General control	.001	.010	.922	.577	.448
13. General public buildings	.005	.035	.852	.072	.789
14. Unallocable less capital outlay	.402	.300	.585	.252	.616
15. Interest on public debt	6.035	1.018	.314	1.810	.180
16. Capital outlay	.033	.074	.786	.147	.702
Long term debt	.541	.061	.805	.142	.706

*df = 1 and 215

which was significant at the .0001 level, was obtained. Consequently, the hypothesis was rejected. Examination of the univariate and step-down F ratios shown in Table 5.8 indicated that the variables which contributed most to the significant difference were long term debt and expenditures for highways, for parks and recreation, and for general control.

In Table 5.9 are displayed the discriminant function coefficients for the canonical variates included within H_2. Application of Bartlett's test of significance of successive comparisons indicated that roots 1-5 were significant at the .0001 level, and that none of the other roots were significant.

The discriminant function coefficients shown in Table 5.9 indicated the relative utility of the variables as discriminators in the five canonical variates included in H_2. In canonical variate 1, which accounted for 65 percent of the canonical variation, expenditure for general control was the most useful discriminator. Canonical variate 2 accounted for 20 percent of the canonical variation; total general expenditures was the variable which discriminated most effectively. Total general expenditures also was the best discriminator in canonical variate 3, which accounted for 9 percent of the canonical variation. In

TABLE 5.8

H_2: B=C, C=D, D=E, E=F, F=G (ALL REMAINING SOURCES OF VARIATION) EXPENDITURE DATA FOR 1962

Multivariate F Ratio = 2.044; p = .001; df = 85 and 965

Purpose of Expenditure	Mean Square	Univariate F*	P	Step-down F	P
1. Total general expenditures	53.462	1.227	.298	1.227	.298
2. General expenditures less capital outlay	19.572	1.436	.213	.946	.452
3. Education	.193	1.061	.383	.762	.578
4. Education less capital outlay	.118	.763	.578	.434	.825
5. Highways less capital outlay	6.886	8.854	.0001	8.419	.0001
6. Public welfare	5.892	.293	.917	.364	.873
7. Hospitals less capital outlay	.107	.221	.953	.346	.884
8. Health	.061	2.802	.018	2.079	.069
9. Police protection	.154	.611	.692	.866	.505
10. Parks and recreation	.100	3.035	.012	3.818	.003
11. Financial administration	.015	.384	.860	1.115	.354
12. General control	.149	2.121	.064	4.531	.0007
13. General public buildings	.080	.577	.717	1.032	.400
14. Unallocable less capital outlay	3.100	2.312	.045	1.836	.107
15. Interest on public debt	4.317	.728	.603	.894	.486
16. Capital outlay	.621	1.388	.230	1.257	.284
Long term debt	82.366	9.312	.0001	4.645	.0005

*df = 5 and 214

TABLE 5.9

DISCRIMINANT FUNCTION COEFFICIENTS FOR THE CANONICAL VARIATES INCLUDED WITHIN H_2, PERCENTAGE OF CANONICAL VARIATION ATTRIBUTABLE TO EACH COMPARISON, AND SIGNIFICANCE OF SUCCESSIVE COMPARISONS, EXPENDITURE DATA FOR 1962

	Raw Coefficients					Standardized Coefficients				
Purpose of Expenditure	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5
1. Total general expenditures	−.110	.122	−.148	.105	−.015	−.724	.804	−.975	.692	−.096
2. General expenditures less capital outlay	−.017	.034	−.107	.112	.049	−.064	.125	−.395	.414	.179
3. Education	.608	−1.706	−.078	1.911	1.946	.260	−.729	−.033	.816	.831
4. Education less capital outlay	−1.042	.970	−.174	−2.029	−2.700	−.409	.381	−.068	−.796	−1.060
5. Highways less capital outlay	.840	−.778	.397	.177	−.330	.741	−.686	.350	.156	−.291
6. Public welfare	.003	.037	.067	−.090	.010	.012	.166	.230	−.404	.046
7. Hospitals less capital outlay	.489	.259	.102	−.335	.373	.340	.180	.071	−.234	.260
8. Health	.175	−3.826	−1.863	.399	−2.515	.026	−.564	−.275	.059	−.371
9. Police protection	−.078	.090	.233	.628	−.238	−.039	.045	.117	.315	−.120
10. Parks and recreation	−1.307	−.918	2.294	1.088	−.209	−.237	−.167	.416	.197	−.038
11. Financial administration	−1.709	.179	−.766	−1.705	−.586	−.336	.035	−.151	−.335	−.115
12. General control	3.102	−2.719	2.654	−3.243	2.577	.821	−.720	.702	−.858	.709
13. General public buildings	.676	.511	−1.128	−.457	−.094	.251	.190	−.419	−.170	−.035
14. Unallocable less capital outlay	−.146	−.376	−.004	−.537	−.125	−.169	−.436	−.005	−.622	−.145
15. Interest on public debt	−.008	.139	.026	.231	.179	−.019	.337	.064	.563	.436
16. Capital outlay	.060	.714	.010	.825	−.868	.040	.478	.573	.552	−.580
Long term debt	−.209	−.167	.857	−.065	.119	−.621	−.496	.031	−.194	.353
% of canonical variation	65.17	19.95	9.15	3.99	1.17					

Bartlett's test for significance of successive comparisons:
Roots 1-5 Chi Square = 166.67, df = 85, p = .0001
Roots 2-5 Chi Square = 65.38, df = 64, p = .4287
Roots 3-5 Chi Square = 28.85, df = 45, p = .9707
Roots 4-5 Chi Square = 11.31, df = 28, p = .9979
Root 5 Chi Square = 3.47, df = 13, p = .9957

canonical variates 4 and 5, which together accounted for only about 5 percent of the variance, expenditure for general control and expenditure for education exclusive of capital outlay, respectively, were the most useful discriminators.

The restriction with regard to further analysis after rejection of an hypothesis was then relaxed, and all planned comparisons were made. The results are shown in Table 5.10. A multivariate F ratio significant at beyond the .0001 level was found in the comparison of the developing suburb and small city categories. The comparison of the minor urban core city and the independent city categories produced a multivariate F ratio which was significant at beyond the .05 level. No statistically significant difference was found in any of the other comparisons.

The variable which best discriminated between the major and minor urban core city categories and between the independent city and established suburb categories was total general expenditures. Expenditure for highways was the variable which best discriminated in the comparison of the minor urban core city and independent city categories. Expenditure for general control was the most useful discriminator in the comparison involving the established and developing

TABLE 5.10

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS AND MULTIVARIATE F RATIOS FOR THE PLANNED COMPARISONS, EXPENDITURE DATA FOR 1962

Purpose of Expenditure	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
1. Total general expenditures	.947	−.497	.953	−.613	−.638	−1.078
2. General expenditures less capital outlay	.007	−.034	.419	−.163	−.078	−.090
3. Education	−.529	.458	−.017	−.323	.131	.958
4. Education less capital outlay	.303	−.346	−.177	.160	−.380	−.844
5. Highways less capital outlay	−.435	.843	−.319	.359	.610	.824
6. Public welfare	−.236	−.269	−.196	.178	.079	−.089
7. Hospitals less capital outlay	.224	.126	.156	.411	.355	.138
8. Health	.078	.529	−.125	−.032	−.174	.322
9. Police protection	−.413	−.156	−.027	−.204	.019	−.106
10. Parks and recreation	.550	.026	−.448	−.405	−.170	−.007
11. Financial administration	−.134	−.282	−.086	−.071	−.368	−.232
12. General control	−.608	.560	−.644	.831	.690	1.274
13. General public buildings	−.018	.136	.464	.410	.186	−.029
14. Unallocable less capital outlay	.508	.276	−.432	.105	−.317	.226
15. Interest on public debt	−.546	−.420	.278	−.264	.121	−.144
16. Capital outlay	.195	−.207	−.100	−.264	.293	−.559
Long term Debt	−.220	−.272	−.531	−.513	−.707	.189
Multivariate F ratio	.631	1.798	1.288	1.406	5.084	1.098
df	17&198	17&198	17&198	17&198	17&198	17&198
p	.865	.030	.203	.137	.0001	.358

suburb categories, and the small city and small town categories. In the comparison of the developing suburb and small city categories, long term debt was the most useful discriminator.

Analyses of Data for 1967

The statistical procedures employed in the analyses of the data for 1967 were the same as those applied to the data for 1962. Descriptive statistics for the total sample and for each category will be presented first; the results of the factor analyses will next be presented; and the section will be concluded with the results obtained from the multivariate analyses of variance.

Mean Revenue and Expenditure

In Table 5.11 are shown the means and standard deviations of the revenue variables, expenditure variables, and long term debt for the total sample of counties and for each category. Revenue from taxes levied by the county again was the leading source of revenue for the entire sample of counties with a mean of $30 per capita. Revenue from taxes also was the most important source of revenue in each of the seven categories, ranging from a high of $37 per capita in the established suburb category to a low of $23 per capita in the small city category. Revenue from other governmental sources also was the second ranking revenue source in each of the seven categories, ranging from a high of $30 per capita in the small town category to a low of $14 per capita in the major urban core city category. Revenue from other sources, the third ranking source of revenue for the total sample, ranged from a high of $11 per capita in the small town category to a low of $8 per capita in the minor urban core city, established suburb, and developing suburb categories.

For the entire sample of school districts, the mean total general expenditure per capita was $68. Mean total general expenditure per capita ranged from a high of $85 in the small town category to a low of $45 in the minor urban core city category. Mean general expenditure exclusive of capital outlay for the entire sample was $57 per capita and ranged from a high of $64 per capita in the established suburb and small city categories to a low of $38 per capita in the minor urban core city category.

Expenditure for public welfare was the largest single item of expenditure for the entire sample of counties with a mean of $17 per capita. Expenditure for public welfare was the largest expenditure item in the minor urban core city category, the established suburb category, and the developing suburb category and was a major expenditure item of counties in each of the seven categories. Expenditure for highways was the second ranking expenditure item for the entire sample with a mean of $14 per capita. Expenditure for highways was the largest expenditure item in the independent city category and in the small town category and was an important expenditure item in each of the seven categories. Expenditure for capital outlay was the third largest item of expenditure for the entire sample with a mean of $9 per capita. It also was a large expenditure item in each of the seven categories. The mean expenditure for many items was quite similar from one category of county to another.

The mean long term debt per capita for the entire sample of counties was $42.

TABLE 5.11

MEANS AND STANDARD DEVIATIONS OF THREE REVENUE VARIABLES, SIXTEEN EXPENDITURE VARIABLES, AND LONG TERM DEBT FOR THE TOTAL SAMPLE AND BY CATEGORIES, COUNTY DATA FOR 1967 (DATA STANDARDIZED ON POPULATION)

Variable	Category A Mean	Category A S.D.	Category B Mean	Category B S.D.	Category C Mean	Category C S.D.	Category D Mean	Category D S.D.	Category E Mean	Category E S.D.	Category F Mean	Category F S.D.	Category G Mean	Category G S.D.	All Districts Mean	All Districts S.D.
Revenue from:																
1. Intergovernmental	14	19	17	24	25	21	27	17	29	18	22	24	30	30	24	23
2. Taxes	30	23	30	47	25	11	37	20	36	20	23	12	34	58	30	35
3. Other local sources	10	12	8	8	9	8	8	4	8	5	9	11	11	10	9	8
Expenditure for:																
1. Total general expenditure	55	49	45	30	59	29	77	37	76	42	71	106	85	119	68	70
2. General expenditures less capital outlay	42	43	38	26	51	26	64	34	64	39	64	97	56	36	57	81
3. Education	3	7	3	5	6	8	5	5	6	7	3	7	3	9	4	7

TABLE 5.11 (cont.)

Variable	Category A Mean	Category A S.D.	Category B Mean	Category B S.D.	Category C Mean	Category C S.D.	Category D Mean	Category D S.D.	Category E Mean	Category E S.D.	Category F Mean	Category F S.D.	Category G Mean	Category G S.D.	All Districts Mean	All Districts S.D.
4. Education less capital outlay	2	4	2	5	4	7	4	4	4	5	3	7	2	5	3	6
5. Highways less capital outlay	7	7	9	6	16	10	13	8	10	7	16	8	23	19	14	11
6. Public welfare	10	14	18	58	12	12	19	15	22	16	10	14	21	55	17	34
7. Hospitals less capital outlay	8	10	4	9	7	10	6	8	5	7	6	14	7	11	6	10
8. Health	2	3	2	2	2	2	3	2	3	2	2	2	2	2	2	2
9. Police protection	4	2	3	1	3	2	6	7	6	5	4	4	4	3	4	4
10. Parks and recreation	3	4	2	3	1	2	4	4	3	3	2	2	2	1	2	3
11. Financial administration	2	1	2	1	2	1	2	1	2	5	2	3	2	2	2	2
12. General control	4	2	4	2	4	2	5	2	4	1	5	4	6	5	5	3
13. General public buildings	1	1	2	1	2	3	2	3	2	2	2	4	1	1	2	3
14. Unallocable less capital outlay	10	13	6	14	4	4	12	18	15	20	4	4	5	7	8	13
15. Interest on public debt	1	1	10	54	1	1	2	2	2	5	1	1	0	0	3	21
16. Capital outlay	10		7	10	8	6	12	6	11	9	7	9	10	6	9	8
Long term debt	47	46	40	43	37	101	70	70	69	61	23	51	11	13	42	64
	N=13		N=34		N=35		N=35		N=34		N=35		N=35		N=221	

Category A = Major Urban Core City
Category B = Minor Urban Core City
Category C = Independent City
Category D = Established Suburb
Category E = Developing Suburb
Category F = Small City
Category G = Small Town

Mean long term debt ranged from a high of $70 per capita in the established suburb category to a low of $11 per capita in the small town category. The two suburb categories had the highest long term debt per capita; the small city and small town categories had the lowest debt per capita.

Factor Analyses

The determinant of the correlation matrix was .19894-06. The hypothesis that correlations of the variables in the population differed only randomly from zero when tested by Bartlett's test of sphericity was rejected.

Table 5.12 contains the rotated factor matrix obtained by application of the alpha factoring procedure. The seven factors extracted by the alpha procedure accounted for only 63.5 percent of the total variance in the array of twenty variables. The estimates of communality for each variable shown in Table 5.12 indicated that several of the variables—for example, revenue from intergovernmental sources, expenditure for education, and expenditure for public welfare—had much in common with other variables, and the most of the variables exhibited considerable communality.

In Table 5.13 is displayed the rotated factor matrix obtained by subjecting the twenty variables to the image factoring procedure. The fifteen components extracted by the image procedure accounted for 66.3 percent of the total variance.

Factor I extracted by the alpha procedure accounted for 20.6 percent of the factor variance. It was associated with revenue from intergovernmental sources and from taxes, and with expenditures for public welfare and for health. Component I extracted by the image procedure accounted for 13.9 percent of the factor variance and was closely associated with expenditure for public welfare.

Factor II obtained from the alpha procedure accounted for 20.5 percent of the factor variance. It was associated with total general expenditures, expenditure for education, expenditure for education exclusive of capital outlay, and expenditure for general control. Component II obtained from the image procedure accounted for 13.8 percent of the factor variance. Component II was similar to Factor II in that it was associated with expenditure for education and with expenditure for education exclusive of capital outlay. However, total general expenditure and expenditure for general control did not load on this component.

Factor III obtained from the alpha procedure accounted for 14.9 percent of the factor variance and was associated with expenditure for police protection, for parks and recreation, and for capital outlay, and with long term debt. Component III obtained from the image procedure accounted for 13.1 percent of the factor variance. It was associated with revenue from other local sources and expenditure for hospitals.

Factor IV obtained from the alpha procedure was similar to Component III. Factor IV accounted for 14.9 percent of the factor variance and was associated with revenue from other local sources, expenditure for hospitals and expenditure for financial administration. Component IV obtained from the image procedure accounted for 12 percent of the factor variance and was associated with total general expenditures, expenditure for police protection, and expenditure for general control.

TABLE 5.12

ROTATED FACTOR MATRIX, ALPHA PROCEDURE, FOR THREE REVENUE VARIABLES, SIXTEEN EXPENDITURE VARIABLES, AND LONG TERM DEBT FOR THE TOTAL SAMPLE, COUNTY DATA FOR 1967 (DATA STANDARDIZED ON POPULATION)

Variable	Factor I	II	III	IV	V	VI	VII	H^2
Revenue from:								
1. Intergovernmental	.684	.323	.021	.096	.084	.401	.323	.908
2. Taxes	-.751	.014	.036	.085	-.000	.153	-.042	.800
3. Other local sources	.052	.003	.073	.865	.002	-.006	-.002	.831
Expenditure for:								
1. Total general expenditures	.064	.793	.300	.111	-.100	.211	.016	.844
2. General expenditures less capital outlay	.267	.300	.038	.068	.609	.038	.043	.647
3. Education	.250	.723	-.031	-.042	.302	-.060	.069	.896
4. Education less capital outlay	.193	.772	-.082	-.076	.358	-.046	.058	.863
5. Highways less capital outlay	.244	.181	-.003	.192	.026	.791	-.016	.834
6. Public welfare	.671	.056	.154	.006	.056	.271	-.048	.953
7. Hospitals less capital outlay	.067	-.024	.074	.894	.008	.083	-.034	.873
8. Health	.427	.289	.231	.144	.071	-.301	.135	.520
9. Police protection	.048	.316	.768	-.004	-.007	-.047	-.007	.665
10. Parks and recreation	.129	.016	.668	.133	.081	.097	-.045	.602
11. Financial administration	-.327	.011	.095	.469	.122	.120	.023	.482
12. General control	-.145	.691	.282	-.002	-.027	.178	-.037	.772
13. General public buildings	-.094	.054	.220	.055	.833	.005	-.026	.551
14. Unallocable less capital outlay	.222	.153	.145	.066	.029	-.223	.821	.708
15. Interest on public debt	-.062	.035	-.003	-.045	.012	.098	.543	.343
16. Capital outlay	.133	.224	.441	.307	.169	.232	.074	.719
Long term debt	.097	-.033	.565	.035	.164	-.204	.261	.448
Factor variance	2.745	2.728	1.992	1.986	1.397	1.289	1.186	
% of factor variance	20.6	20.5	14.9	14.9	10.5	9.7	8.9	
% of total variance = 63.5								

TABLE 5.13

ROTATED COMPONENT MATRIX, IMAGE PROCEDURE, FOR THREE REVENUE VARIABLES, SIXTEEN EXPENDITURE VARIABLES, AND LONG TERM DEBT FOR THE TOTAL SAMPLE, COUNTY DATA FOR 1967 (DATA STANDARDIZED ON POPULATION)

Variable	Components I	II	III	IV	V	VI	VII	VIII
Revenue from:								
1. intergovernmental	.274	.255	.098	.148	.080	-.506	.596	.090
2. Taxes	-.245	-.067	.053	.125	-.043	.791	-.089	-.009
3. Other local sources	.067	-.030	.870	.043	.068	.036	.039	.039
Expenditure for:								
1. Total general expenditure	.110	.294	.123	.778	.156	-.032	.190	.031
2. General expenditure less capital outlay	.128	.297	.095	.125	.040	-.182	.142	.612
3. Education	.073	.868	-.064	.201	.065	-.128	.073	.146
4. Education less capital outlay	.098	.824	-.066	.274	-.007	-.057	.051	.222

TABLE 5.13 (cont.)

Variable	Components I	II	III	IV	V	VI	VII	VIII
5. Highways less capital outlay	.194	.026	.128	.167	.005	.007	.820	.026
6. Public welfare	.924	.056	.016	.057	.066	-.162	.185	.051
7. Hospitals less capital outlay	.005	-.036	.883	.018	.128	-.049	.113	.033
8. Health	.189	.265	.089	.130	.229	-.395	-.121	.069
9. Police protection	.073	.030	-.001	.447	.605	-.080	-.060	.094
10. Parks and recreation	.116	.005	.134	.062	.678	-.003	.095	.071
11. Financial administration	-.092	-.046	.393	.034	.073	.355	.052	.107
12. General control	.008	.204	-.014	.788	.128	.114	.094	.088
13. General public buildings	.012	.104	.031	.030	.175	.085	-.033	.637
14. Unallocable less capital outlay	.100	.123	.048	.094	.118	-.197	-.090	.050
15. Interest on public debt	-.042	-.010	-.033	-.034	-.002	.029	.074	.016
16. Capital outlay	.056	.280	.205	.064	.534	-.029	.343	.057
Long term debt	.091	-.033	.028	.057	.475	-.061	-.176	.172
Factor variance	1.940	1.924	1.825	1.674	1.572	1.377	1.364	.945
% of factor variance	13.9	13.8	13.1	12.0	11.3	9.9	9.8	6.8

% of total variance = 66.3

TABLE 5.13 (cont.)

Variable	Components IX	X	XI	XII	XIII	XIV	XV
Revenue from:							
1. Intergovernmental	.253	-.042	.016	-.045	.027	.007	.011
2. Taxes	-.043	.024	.024	-.007	.013	-.000	.002
3. Other local sources	.021	.003	.059	.023	.034	-.010	.001
Expenditure for:							
1. Total general expenditure	.066	-.066	-.026	.045	-.000	.021	.007
2. General expenditure less capital outlay	.065	-.090	.000	.029	-.069	.010	-.007
3. Education	.043	.051	.018	-.001	.038	-.008	-.002
4. Education less capital outlay	.052	-.050	-.007	.001	-.040	.009	.002
5. Highways less capital outlay	-.030	.023	-.016	.001	-.013	-.002	-.003
6. Public welfare	.003	-.027	.012	-.005	.029	.002	.007
7. Hospitals less capital outlay	-.030	.004	-.063	-.022	-.027	.012	-.001
8. Health	.195	.121	.219	.045	-.002	-.000	-.000
9. Police protection	.029	.002	.014	.005	-.007	-.008	-.001
10. Parks and recreation	-.027	-.040	-.021	-.067	.001	.013	.001
11. Financial administration	.004	.315	.037	.008	-.030	.001	.000
12. General control	-.023	.024	.034	-.026	.015	-.014	-.005
13. Gneral public buildings	-.015	.077	.007	-.011	.038	-.005	.004
14. Unallocable less capital outlay	.674	.036	.086	.154	-.032	.031	-.000
15. Interest on public debt	.507	-.016	-.037	-.074	.015	-.015	.000
16. Capital outlay	.030	.295	-.017	-.001	.112	-.003	-.001
Long term debt	.255	.026	.070	.156	.013	-.014	.000
Factor variance	.899	.228	.075	.067	.035	.003	.000
% of factor variance	6.5	1.6	0.5	0.5	0.3	0.0	0.0

The fifth factor extracted by the alpha procedure accounted for 10.5 percent of the factor variance. Factor V was associated with general expenditure exclusive of capital outlay and with expenditure for general public buildings. Component V obtained from the image procedure was very similar to Factor III extracted by the alpha procedure. Component V accounted for 11.3 percent of the factor variance and was associated with expenditure for police protection, for parks and recreation, and for capital outlay, and with long term debt.

Factor VI obtained from the alpha procedure accounted for 9.7 percent of the factor variance. It was associated with revenue from other governmental sources and with expenditure for highways. Component VI extracted by the image procedure was associated with revenue from taxes and from other governmental sources. Component VI accounted for 9.9 percent of the factor variance.

The seventh factor extracted by the alpha procedure accounted for 8.9 percent of the factor variance. Factor VII was associated with unallocable expenditures and with expenditure for interest on public debt. Component VII extracted by the image procedure was very similar to Factor VI. Component VI was associated with expenditure for highways and revenue from intergovernmental sources and accounted for 9.8 percent of the factor variance.

Component VIII extracted by the image procedure accounted for 6.5 percent of the factor variance and was associated with general expenditures exclusive of capital outlay and with expenditure for general public buildings. Component IX from the image procedure accounted for 6.5 percent of the factor variance and was associated with unallocable expenditure and with expenditure for interest on public debt. It was very similar to Factor VII. The remaining components extracted by the image procedure were not interpreted.

Analyses of Variance

The planned order of comparisons between categories of counties on revenue data for 1967 is shown in Table 5.14. Examination of the means and standard

TABLE 5.14

PLANNED ORDER OF COMPARISONS BETWEEN CATEGORIES OF COUNTIES, REVENUE DATA FOR 1967

Design Matrix	Category of County A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2		X	X				
Comparison 3			X	X			
Comparison 4				X	X		
Comparison 5					X	X	
Comparison 6						X	X

deviations indicated that there was a strong possibility that all planned comparisons could be completed without rejection of a null hypothesis. This supposition proved to be correct.

In Table 5.15 are displayed the results of the six planned comparisons. In each comparison, the multivariate F ratio obtained was not statistically significant. Thus, in each instance the hypothesis of no significant difference between the two categories being compared was sustained. However, the test of the general mean produced a difference significant at the .0001 level. Thus, statistically significant differences apparently did exist between categories which were not compared.

TABLE 5.15

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS AND MULTIVARIATE F RATIOS FOR THE PLANNED COMPARISONS, REVENUE DATA FOR 1967

Source of Revenue	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
1. Intergovernmental sources	.980	1.003	-.215	.144	-.259	-.599
2. Taxes	-.189	-.247	-.884	-.855	-.622	-.431
3. Other local sources	-.430	.232	.427	.688	.795	-.431
Multivariate F ratio	1.235	1.814	.616	.627	.996	1.395
df	3 & 212	3 & 212	3 & 212	3 & 212	3 & 212	3 & 212
p	.293	.146	.605	.598	.396	.245

The discriminant function coefficients indicated that the variable which best discriminated in the comparisons involving the major and minor urban core city categories, the minor urban core city and independent city categories, and the small city and small town categories was revenue from other governmental sources. In the comparisons involving the independent city and established suburb categories and the established suburb and developing suburb categories, revenue from taxes proved to be the most useful discriminator. Revenue from other local sources was the variable which best discriminated in the comparison of the developing suburb and small city categories.

In Table 5.16 is shown the planned order of comparisons between categories of counties on expenditure data for 1967. A perusal of the descriptive statistics indicated that the likelihood of completing all planned comparisons before rejection of an hypothesis was small. Consequently, H_1 tested for differences between the major and minor urban core city categories. H_2 tested for differences in all remaining sources of variation.

In Table 5.17 are shown results of the test of H_1, i.e., no significant difference between the major urban core city and minor urban core city categories with regard to purposes of expenditure. The multivariate F ratio which was obtained, .651, had a probability of occurrence of .847. Thus, the null hypothesis was sustained. The univariate and step-down F ratios indicated that on no variable did a statistically significant difference between the two categories appear.

In Table 5.18 are displayed the results of H_2, i.e., no significant difference in all remaining sources of variation. The multivariate F ratio obtained, 1.988, was

TABLE 5.16

PLANNED ORDER OF COMPARISONS BETWEEN CATEGORIES OF COUNTIES, EXPENDITURE DATA FOR 1967

Design Matrix	Category of District A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2						X	X
Comparison 3					X	X	
Comparison 4				X	X		
Comparison 5			X	X			
Comparison 6		X	X				

TABLE 5.17

H_1: A=B (MAJOR URBAN CORE CITY VS. MINOR URBAN CORE CITY) EXPENDITURE DATA FOR 1967

Multivariate F Ratio = .651; p = .847; df = 17 and 198

Purpose of Expenditure	Mean Square	Univariate F*	p	Step-down F	p
1. Total general expenditures	9.766	.199	.657	.199	.657
2. General expenditures less capital outlay	1.572	.024	.877	.002	.964
3. Education	.050	.101	.751	.015	.903
4. Education less capital outlay	.003	.011	.918	.980	.323
5. Highways less capital outlay	.750	.687	.408	1.196	.276
6. Public welfare	7.519	.663	.416	.436	.510
7. Hospitals less capital outlay	1.411	1.409	.237	1.363	.245
8. Health	.006	.155	.695	.001	.979
9. Police protection	.173	1.038	.309	.550	.459
10. Parks and recreation	.042	.563	.454	.053	.819
11. Financial administration	.003	.051	.821	.046	.831
12. General control	.000	.004	.952	.405	.525
13. General public buildings	.012	.181	.671	.780	.379
14. Unallocable less capital outlay	1.507	.904	.343	.440	.508
15. Interest on public debt	7.932	1.727	.190	3.202	.075
16. Capital outlay	.925	1.402	.238	1.202	.274
Long term debt	3.785	.100	.753	.273	.602

*df = 1 and 214

TABLE 5.18

H_2: B=C, C=D, D=E, E=F, F=G (ALL REMAINING SOURCES OF VARIATION) EXPENDITURE DATE FOR 1967

Multivariate F Ratio = 1.988; p=.0001; df = 85 and 965

Purpose of Expenditure	Mean Square	Univariate F*	p	Step-down F	p
1. Total general expenditures	72.433	1.472	.200	1.472	.200
2. General expenditures less capital outlay	67.230	1.029	.402	.729	.602
3. Education	.608	1.231	.296	2.026	.076
4. Education less capital outlay	.322	1.051	.389	.864	.507
5. Highways less capital outlay	10.122	9.264	.0001	8.139	.0001
6. Public welfare	7.837	.691	.631	1.820	.110
7. Hospitals less capital outlay	.203	.203	.961	.381	.862
8. Health	.135	3.469	.005	2.027	.076
9. Police protection	.607	3.647	.004	2.249	.051
10. Parks and recreation	.325	4.312	.001	4.006	.002
11. Financial administration	.042	.747	.590	1.153	.334
12. General control	.182	2.260	.050	3.242	.008
13. General public buildings	.056	.843	.521	.881	.495
14. Unallocable less capital outlay	6.712	4.028	.002	1.558	.174
15. Interest on public debt	3.603	.785	.562	1.233	.295
16. Capital outlay	1.451	2.201	.055	.756	.583
Long term debt	195.605	5.148	.0002	1.147	.337

*df = 5 and 214

significant at the .0001 level. Consequently, the hypothesis was not accepted. Examination of the univariate and step-down F ratios indicated that the variables which contributed most to the significant difference which was found were expenditure for highways, for parks and recreation, and for general control.

The discriminant function coefficients for the canonical variates associated with H_2 are displayed in Table 5.19. Application of Bartlett's test for significance of successive comparisons indicated that roots 1-5 were significant at the .0001 level, and that none of the remaining roots were significant.

The first canonical variate accounted for nearly 61 percent of the canonical variation; the second canonical variate accounted for about 18 percent of the variation; the third canonical variate accounted for about 12 percent of the variation; and the remaining two variates accounted for less than 10 percent of the canonical variation. The discriminant function coefficients indicated that the best discriminator with regard to the first canonical variate was expenditure for highways. In the second canonical variate, unallocable expenditures was the most potent discriminator. General expenditures exclusive of capital outlay was

TABLE 5.19

DISCRIMINANT FUNCTION COEFFICIENTS FOR THE CANONICAL VARIATES INCLUDED WITHIN H_2 PERCENTAGE OF CANONICAL VARIATION ATTRIBUTABLE TO EACH COMPARISON, AND SIGNIFICANCE OF SUCCESSIVE COMPARISONS, EXPENDITURE DATA FOR 1967

	Raw Coefficients					Standardized Coefficients				
Purpose of Expenditure	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5
1. Total general expenditures	−.064	−.045	.074	.053	.113	−.446	−.318	.516	.374	.794
2. General expenditures less capital outlay	−.001	.002	.118	.064	−.002	−.004	.016	.958	.519	−.019
3. Education	.423	−.299	−.565	−.101	1.243	.297	−.211	−.397	−.071	.874
4. Education less capital outlay	−.760	−.126	−1.071	.537	−1.284	−.421	−.070	−.593	.297	−.710
5. Highways less capital outlay	.901	.375	−.487	.033	−.073	.942	.392	−.509	.034	−.077
6. Public welfare	−.060	−.023	.057	−.131	.075	−.203	−.079	.193	−.440	.252
7. Hospitals less capital outlay	.273	−.207	−.513	−.188	−.253	.274	−.207	−.513	−.189	−.253

TABLE 5.19 (cont.)

Purpose of Expenditure	Raw Coefficients					Standardized Coefficients				
	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5
8. Health	.229	1.436	−.761	−.468	2.245	.045	.283	−.150	−.092	.443
9. Police protection	.241	1.213	−.415	.893	−.384	.098	.495	−.169	.365	−.157
10. Parks and recreation	−1.939	−.242	1.454	−.542	−.901	−.532	−.066	.399	−.149	−.247
11. Financial administration	−.684	−.266	2.397	2.047	2.548	−.161	−.063	.565	.483	.601
12. General control	−2.218	1.058	.445	−1.904	−2.600	.629	.230	.126	−.540	−.737
13. General public buildings	.408	−.046	−2.209	.510	−.567	.105	−.012	−.567	.131	−.146
14. Unallocable less capital outlay	−.117	.502	.027	−.109	−.024	−.151	.648	.035	−.141	−.031
15. Interest on public debt	−.038	−.225	.082	−.116	.014	−.082	−.483	.176	−.249	.030
16. Capital outlay	−.029	.471	.160	−.460	−.403	−.273	.383	.130	−.374	−.327
Long term debt	−.336	−.027	−.083	.025	−.024	−.176	−.164	−.513	.156	−.145
% of canonical variation	60.78	18.11	11.86	5.91	3.34					

Bartlett's test for significance of successive comparisons:
Roots 1-5 Chi Square = 162.44, df = 85, p = .0001
Roots 2-5 Chi Square = 70.49, df = 64, p = .2697
Roots 3-5 Chi Square = 38.62, df = 45, p = .7378
Roots 4&5 Chi Square = 17.20, df = 28, p = .9446
Root 5 Chi Square = 6.26, df = 13, p = .9362

the most useful discriminator in the third canonical variate. The variable which discriminated most effectively in the fourth canonical variate was expenditure for general control. With regard to the fifth canonical variate, expenditure for education was the most useful discriminator.

By relaxing the restriction with regard to carrying out further analysis after rejection of an hypothesis, it was possible to complete all of the planned comparisons. The results obtained from the six planned comparisons are displayed in Table 5.20. A difference statistically significant at beyond the .01 level was found in the comparison of the developing suburb and small city categories, and a difference statistically significant at beyond the .05 level was found in the comparison of the minor urban core city and independent city categories. In the other four comparisons, the differences between categories were not statistically significant.

The discriminant function coefficients indicated that two variables, unallocable expenditures and expenditure for interest on debt, were of approximately equal utility in discriminating between the major and minor urban core city categories and between the small city and small town categories (although in

TABLE 5.20

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS AND MULTIVARIATE F RATIOS FOR THE PLANNED COMPARISONS, EXPENDITURE DATA FOR 1967

Purpose of Expenditure	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
1. Total general expenditures	−.114	−.501	.346	.259	−.420	−.634
2. General expenditures less capital outlay	.332	.020	.711	.291	.138	−.506
3. Education	.113	.188	−.530	.548	.138	.317
4. Education less capital outlay	−.244	−.195	−.326	−.720	−.401	−.440
5. Highways less capital outlay	−.485	.829	−.485	.441	.759	.810
6. Public welfare	−.226	−.384	.178	−.022	−.177	.109
7. Hospitals less capital outlay	.274	.186	−.586	.034	.252	.250
8. Health	−.276	.154	−.039	.067	−.107	.305
9. Police protection	.327	.536	.108	−.176	.007	.074
10. Parks and recreation	−.014	−.516	.453	−.404	−.397	−.367
11. Financial administration	−.086	−.145	.428	.339	−.160	−.450
12. General control	−.037	.413	.062	.072	.693	.719
13. General public buildings	−.410	.102	−.464	−.109	.023	.070
14. Unallocable less capital outlay	.644	.421	.448	−.370	−.239	.285
15. Interest on debt	−.653	−.617	−.105	.146	.027	−.150
16. Capital outlay	.602	.085	.419	−.488	−.247	.174
Long Term Debt	−.221	−.126	−.413	−.260	−.208	−.193
Multivariate F ratio	.651	2.005	1.600	1.417	4.182	1.182
df	17&198	17&198	17&198	17&198	17&198	17&198
p	.847	.013	.067	.131	.0001	.282

each case the difference between categories was not statistically significant). General expenditures exclusive of capital outlay best discriminated between the minor urban core city and independent city categories. In the comparison of the independent city and established suburb categories, expenditure for general control was the most useful discriminator. Unallocable expenditures was the variable which best discriminated in the comparison of the established and developing suburb categories. With regard to the developing suburb and small city categories, expenditure for highways was the variable which best discriminated between them.

Changes from 1962 to 1967

In this section comment will be made relative to changes from 1962 to 1967 in mean revenue and expenditure, as well as changes observed in the factor analytic solutions and in the results obtained from the analyses of variance.

Mean Revenue and Expenditure

No change occurred between 1962 and 1967 in the relative importance of the three sources of revenue. For the entire sample as well as for the seven categories revenue from taxes ranked first both years; revenue from intergovernmental sources ranked second both years; and revenue from other local sources ranked third both years. Mean revenue from taxes for the total sample increased from $26 per capita in 1962 to $30 per capita in 1967; mean revenue from other governmental sources increased from $20 per capita in 1962 to $24 per capita in 1967; and mean revenue from other local sources increased from $6 per capita in 1962 to $9 per capita in 1967.

Rankings within each of the seven categories in 1967 were identical to those in 1962. Counties associated with established suburbs, developing suburbs, and small towns received the largest amount of revenue per capita from other governmental sources in both 1962 and 1967. Counties associated with major and minor urban core cities received the least revenue per capita from intergovernmental sources in both 1962 and 1967.

Mean total general expenditure per capita for the entire sample increased from $53 per capita to $68 per capita between 1962 and 1967, an increase of about 28 percent. The small town category had the highest per capita total general expenditure in both 1962 and 1967, and the minor urban core city category had the lowest total general expenditure per capita in both 1962 and 1967. Expenditure for welfare was the largest expenditure item for the entire sample in both 1962 and 1967, and expenditure for highways was the second ranking expenditure item in both years. Three expenditure items ranked high in each category for each of the two years: expenditure for public welfare, expenditure for highways, and expenditure for capital outlay. In general, expenditure for the various items increased in amount per capita between 1962 and 1967 but showed little change in ranking relative to other expenditure items during this period. For many expenditure items, little difference in expenditure per capita between the categories was evident.

Factor Analyses

The factors extracted when the alpha factoring procedure was applied to the data for 1962 and the data for 1967 were somewhat different. Revenue from intergovernmental sources loaded on Factor I in both years; unallocable expenditures and interest on public debt loaded on Factor I in 1962, but expenditure for public welfare and for health loaded on Factor I in 1967. The second factor extracted in 1967 was similar to the second factor extracted in 1962, although the loadings varied somewhat. Factor IV extracted from 1962 data was very similar to Factor IV extracted from 1967 data. The remaining factors extracted from 1967 data were dissimilar to those extracted from 1962 data.

The order of components extracted when the data for 1962 and the data for 1967 were subjected to the image factoring procedure differed rather substantially. The first component extracted from 1967 data was identical to the fifth component extracted from 1962 data. The component was closely associated with expenditure for public welfare and accounted for 13.9 percent of the factor variance in 1967 compared with 11.8 percent of the factor variance in 1962. The first component extracted from 1962 data was identical to the fourth component extracted from 1967 data. In 1962 the component accounted for 15.5 percent of the factor variance; in 1967 it accounted for 12 percent of the factor variance. The component could be described as general expenditures. The second component extracted in 1962 and the second component extracted in 1967 were virtually identical and could be described as expenditure for education. No component similar to the third component extracted in 1962 was extracted in 1967. The third component extracted in 1967 was very similar to the fourth component extracted in 1962. The fifth component extracted in 1967 was somewhat similar to the sixth component extracted in 1962. The remaining components were dissimilar.

Analyses of Variance

With regard to revenue sources, no statistically significant differences were found in either 1962 or 1967 in the comparisons involving the following categories: major vs. minor urban core cities, minor urban core city vs. independent city, independent city vs. established suburb, established vs. developing suburbs, developing suburb vs. small city and small city vs. small town. However, the multivariate test of equality of mean vectors for the general mean produced an F ratio which was statistically significant at beyond the .0001 level in both 1962 and 1967, indicating that statistically significant differences did exist between categories which were not compared.

Revenue from intergovernmental sources was the most useful discriminator in the comparisons involving the major urban core city and the minor urban core city categories in both 1962 and 1967. In the comparison involving the minor urban core city category and the independent city category, revenue from taxes proved to be the most effective discriminator in 1962 and again in 1967. Revenue from other local sources best discriminated in the comparison involving the developing suburb category and the small city category in both 1962 and 1967. In the remaining two comparisons, however, the variable which discriminated most effectively in 1967 differed from the variable which

discriminated most effectively in 1962. Revenue from other local sources was the variable which best discriminated in the comparison involving the established suburb category and the developing suburb category in 1962. In 1967, the variable which was the most potent discriminator in the comparison involving these two categories was revenue from taxes. In 1962, the most useful discriminator in the comparison involving the small city category and the small town category was revenue from taxes. In 1967, on the other hand, the most useful discriminator in the comparison involving these two categories was revenue from other governmental sources.

The hypothesis that no significant difference existed between the major urban core city and minor urban core city categories with regard to purposes of expenditure was accepted for both 1962 and 1967 data. The hypothesis that no significant difference existed in all remaining sources of variation was rejected for both 1962 and 1967 expenditure data. The variables which contributed most to the significant differences found in 1962 were expenditure for highways, for parks and recreation and for general control, and long term debt. The variables which contributed most to the significant differences found in 1967 were expenditure for highways, for parks and recreation, and for general control.

The variable which best discriminated with regard to the first canonical variate in 1962 was expenditure for general control with expenditure for highways also useful. In 1967 expenditure for highways was the best discriminator with expenditure for general control also useful. Total general expenditure discriminated most effectively with regard to the second canonical variate in 1962; in 1967 the variable which discriminated best was unallocable expenditures. In the third canonical variate, the variable which discriminated most effectively was total general expenditures in 1962 and was general expenditures exclusive of capital outlay in 1967. Expenditure for general control was the best discriminator in canonical variate four in both 1962 and 1967. The most potent discriminator in the fifth canonical variate in 1962 was expenditure for education exclusive of capital outlay with expenditure for education also useful. In 1967 expenditure for education proved to be the most useful discriminator in this canonical variate. Canonical variate 1 accounted for 65 percent of the canonical variance in 1962 and for 61 percent of the canonical variance in 1967. The second canonical variate accounted for 20 percent of the variance in 1962 compared to 18 percent of the variance in 1967.

When the restriction concerning further analysis after rejection of an hypothesis was relaxed and all planned comparisons were completed, a difference statistically significant at beyond the .05 level was found in both 1962 and 1967 in the comparison involving the minor urban core city and independent city categories. A difference which was statistically significant at beyond the .0001 level was obtained in 1962 and again in 1967 in the comparison of the developing suburb category with the small city category. In the remaining comparisons—independent city vs. established suburb, established suburb vs. developing suburb, and small city vs. small town—the differences were not statistically significant in either 1962 or 1967.

The expenditure variables which were the most useful discriminators in 1962 were not the most useful discriminators in 1967. Total general expenditures was the variable which best discriminated between the major and minor urban core

city categories in 1962; in 1967 the best discriminators were unallocable expenditures and interest on debt. In 1962, expenditure for highways was the most potent discriminator between the minor urban core city and independent city categories; in 1967 the most potent discriminator again proved to be expenditure for highways. Total general expenditures best discriminated in the comparison of the independent city and established suburb categories in 1962; in 1967 it was general expenditures exclusive of capital outlay. The established and developing suburb categories were best discriminated by expenditure for general control in 1962 and by expenditure for education exclusive of capital outlay in 1967. The established suburb and small city categories were best discriminated by long term debt in 1962 and by expenditure for highways in 1967. In the comparison of the small city and small town categories, expenditure for general control was the most useful discriminator in 1962 while expenditure for highways was the most useful discriminator in 1967.

CHAPTER VI

ANALYSES OF COMBINED DATA FOR SCHOOL DISTRICTS, MUNICIPALITIES AND COUNTIES

In this chapter are reported the results of analyses designed to provide a comprehensive view of the revenues and expenditures of the major units of local government which were of concern in this study. To attain a comprehensive view of the relative importance of the sources of revenue of local units of government and expenditures by local units of government for various functions, data for school districts, municipalities, and counties were merged for the analyses reported in this chapter. Since several data transformations were required in order to merge the data, the procedures followed will be outlined.

It was necessary to convert all data concerning school district revenues and expenditures to a per capita basis in order that these data could be combined with the data for municipalities and counties. No accurate population estimates were available for most of the school districts which comprised the sample for this study. However, reasonably accurate population estimates for 1966 were available for all Wisconsin school districts. All Wisconsin school districts were classified in accordance with the categories of school districts employed in this study and the relationship of average daily membership in each school district to the estimated population of the district was determined. The mean ratio obtained for each category of district was then employed to estimate the total population of each school district in the sample based upon the district's average daily membership. The following constants were employed to estimate total population from school district average daily membership: major urban core city—.168, minor urban core city—.168, independent city—.181, established suburb—.194, developing suburb—.266, small city—.166, and small town—.224.

School district revenue was standardized on a per capita basis by dividing the revenue from each source by the estimated total population of the school district. All school district expenditures, including expenditure for capital outlay, were combined, and the total expenditure was divided by the estimated population of the district to obtain an estimate of the per capita expenditure for education.

Eighteen functional components of expenditure were established for municipalities and counties. Four variables which were included in the previous analyses—total general expenditures, general expenditures exclusive of capital outlay, expenditure for education, and expenditure for education exclusive of capital outlay—were excluded from the analyses reported in this chapter. The first two variables were excluded because the focus of these analyses was to be upon expenditures for specific functions. The two educational expenditure variables were excluded because it was believed that to retain them would risk double counting—since the expenditure for education reported by the school district undoubtedly constituted the preponderance of the expenditure for this purpose by local units of government.

The expenditure for each function by the municipality and by the county was standardized on a per capita basis and then combined in order to obtain the total

expenditure per capita by municipal and county governments for each of the various functions, i.e., highways, public welfare, hospitals, etc. The revenue received from each source by municipalities and counties also was standardized on a per capita basis. In the case of counties, all revenue from taxes was included in the category of property taxes for purposes of this analysis. Revenue from each source received by school districts, municipalities, and counties was then combined to obtain the per capita revenue from each of the various sources.

The mean and standard deviation of each revenue variable and each expenditure variable was computed for each of the seven categories. The data were not subjected to factor analysis, but multivariate analyses of variance were applied to the revenue variables and to the expenditure variables. Separate analyses were performed for the data for 1962 and the date for 1967. As a result of the transformations which were required, the data employed in the analyses necessarily were rather rough estimates of per capita revenues and expenditures. Consequently, a difference statistically significant at a relatively high level, e.g., at beyond the .0001 level, was considered necessary for the rejection of a null hypothesis.

Analyses of Data for 1962

Descriptive statistics concerning the seven categories will be reported in the first portion of this section. These data will be followed by the results obtained from the multivariate analyses of variance of the revenue and expenditure variables.

Mean Revenue and Expenditure

In Table 6.1 are reported the means and standard deviations of the six revenue variables and nineteen expenditure variables for the combined revenues and expenditures of the school district, and the municipality and the county most closely associated with the school district, for each of the seven categories. Revenue from property taxes constituted the largest source of revenue in each of the seven categories. Mean revenue from property taxes ranged from a high of $124 per capita in the major urban core city category and the developing suburb category to a low of $83 per capita in the small city category.

Revenue from the state was the second ranking revenue source in each category, ranging from a high mean of $71 per capita in the developing suburb category to a low mean of $41 per capita in the minor urban core city category.

The relative importance of the four remaining revenue variables differed considerably from one category to another. Revenue from other governmental sources ranked sixth in importance in the major urban core city category; fifth in importance in the minor urban core city, independent city, and small city categories; and third in importance in the established suburb, developing suburb, and small town categories. Mean revenue from this source ranged from a high of $31 per capita in the established suburb category to a low of $18 per capita in the major urban core city category.

Revenue from other local taxes ranked fifth in importance in the major urban core city and sixth in importance in the other six categories. Mean revenue from

TABLE 6.1

MEANS AND STANDARD DEVIATIONS OF SIX REVENUE VARIABLES AND NINETEEN EXPENDITURE VARIABLES FOR THE COMBINED REVENUES AND EXPENDITURES OF THE SCHOOL DISTRICT, AND THE MUNICIPALITY AND COUNTY ASSOCIATED WITH THE SCHOOL DISTRICT, BY CATEGORIES FOR 1962 DATA (DATA STANDARDIZED ON A PER CAPITA BASIS)

Variable	Category A		Category B		Category C		Category D		Category E		Category F		Category G	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Revenue from:														
1. State	44	27	41	20	51	24	58	24	71	26	43	18	64	25
2. Intergovernmental	18	17	21	24	26	20	31	50	30	51	25	25	29	25
3. Property taxes	124	55	106	79	114	51	117	60	124	55	83	42	91	77
4. Other local taxes	19	21	9	11	10	10	4	5	5	5	6	8	7	8
5. Other local sources	33	12	28	18	35	19	19	11	20	16	29	22	24	10
6. Utilities	23	21	32	45	35	34	14	16	12	8	40	53	15	5
Expenditure for:														
1. Education	82	22	73	22	90	30	129	46	212	172	84	60	119	60
2. Highways	12	5	14	6	21	10	22	8	19	8	22	12	29	17
3. Public welfare	11	14	17	54	16	18	13	10	16	12	18	65	22	72
4. Hospitals	11	12	6	10	11	14	6	7	5	5	5	8	6	9
5. Health	3	2	2	2	4	8	3	5	3	2	6	17	3	4
6. Police protection	17	5	14	10	12	7	12	7	10	3	11	6	10	4

TABLE 6.1 (cont.)

Variable	Category A Mean	Category A S.D.	Category B Mean	Category B S.D.	Category C Mean	Category C S.D.	Category D Mean	Category D S.D.	Category E Mean	Category E S.D.	Category F Mean	Category F S.D.	Category G Mean	Category G S.D.
7. Fire protection	10	3	10	8	9	4	4	4	3	2	6	4	4	2
8. Sewerage	3	1	2	2	2	2	3	5	2	1	3	2	3	1
9. Sanitation other than sewerage	7	4	6	3	5	2	4	3	3	2	4	3	3	2
10. Parks, etc.	9	5	6	5	6	5	6	6	5	3	5	4	3	2
11. Housing and urban renewal	5	8	4	8	3	8	0	2	1	4	6	18	0	0
12. Libraries	2	1	2	1	2	3	1	1	1	1	1	1	1	1
13. Financial administration	3	1	4	2	3	1	3	1	4	5	4	2	3	1
14. General control	5	2	5	2	6	5	7	3	6	2	6	2	7	4
15. Public buildings	3	3	4	3	3	5	2	2	2	2	3	7	2	2
16. Unallocable	16	14	15	17	10	5	14	11	16	24	7	4	11	9
17. Interest on debt	7	3	14	46	5	3	10	38	5	12	3	3	3	2
18. Utilities	17	23	30	66	35	47	15	23	12	8	33	48	16	5
19. Capital outlay	41	10	38	22	39	27	22	17	18	10	35	28	17	8

NOTE: Expenditure for education includes capital outlay reported by school district; expenditure for all municipal and county functions are exclusive of capital outlay.

Category A = Major Urban Core City
Category B = Minor Urban Core City
Category C = Independent City
Category D = Established Suburb
Category E = Developing Suburb
Category F = Small City
Category G = Small Town

other local taxes ranged from a high of $19 per capita in the major urban core city category to a low of $4 per capita in the established suburb category.

Revenue from other local sources was the third leading revenue source in the major urban core city and the independent city categories. Revenue from this source ranked third in importance in the major urban core city and independent city categories and fourth in importance in the other five categories. Mean revenue per capita from other local sources ranged from a high of $35 in the independent city category to a low of $19 in the established suburb category.

Revenue from utilities was the third ranking source of revenue in the minor urban core city, independent city, and small city categories; the fourth ranking revenue source in the major urban core city category; and the first ranking revenue source in the established suburb, developing suburb, and small town categories. Mean revenue from utilities ranged from a high of $40 per capita in the small city category to a low of $12 per capita in the developing suburb category.

Expenditure for education was the largest component of expenditure in each of the seven categories and ranged from a high mean expenditure of $212 per capita in the established suburb category to a low mean expenditure of $73 per capita in the minor urban core city category. Expenditure for capital outlay was the second largest component of expenditure in the major urban core city, minor urban core city, independent city, established suburb, and small city categories; the third largest component of expenditure in the developing suburb category; and the fourth largest component of expenditure in the small town category. Mean expenditure per capita for capital outlay ranged from a high of $41 in the major urban core city category to a low of $17 in the small town category.

Expenditure for utilities was the third ranking component of expenditure in the major urban core city, minor urban core city, independent city, and small city categories; the fourth ranking component in the established suburb category; the fifth ranking component in the small town category; and the sixth ranking component in the developing suburb category. Mean expenditure per capita for utilities ranged from a high of $35 in the independent city category to a low of $12 in the developing suburb category.

Other functions which consistently ranked among the largest components of expenditure in each of the seven categories were highways, public welfare, and police protection. The mean expenditure per capita for hospitals, for police protection, for fire protection and for sanitation other than sewerage consistently was higher in the three large city categories than in the other four categories. The mean expenditure per capita for highways was noticeably lower in the major and minor urban core city categories than in the other five categories. For a number of functions, expenditure per capita was quite consistent from one category to another. For example, the mean expenditure per capita for health, for sewerage, for libraries, for financial administration, for general control, and for public buildings showed relatively small differences from one category to another.

Analyses of Variance

Table 6.2 indicates the planned order of comparisons between categories on

TABLE 6.2

PLANNED ORDER OF COMPARISONS BETWEEN CATEGORIES ON REVENUE DATA FOR 1962

Design Matrix	Category A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2				X	X		
Comparison 3						X	X
Comparison 4					X	X	
Comparison 5			X	X			
Comparison 6		X	X				

revenue date for 1962. Since it did not appear that all planned comparisons could be completed without rejection of a null hypothesis, H_1 contrasted the major and minor urban core city categories, H_2 contrasted the established and developing suburb categories, H_3 contrasted the small city and small town categories, and H_4 contrasted all remaining sources of variation.

In Table 6.3 are displayed the results of the test of H_1, i.e., no significant difference between the major urban core city and minor urban core city categories. The multivariate test of equality of mean vectors produced an F ratio of 4.678, with an associated probability of occurrence of .0002. Thus, the null hypothesis was accepted, but by a very narrow margin. The univariate and step-down F ratios for each of the revenue variables indicated that only on revenue from other local taxes did substantial variation between the two categories occur.

In Table 6.4 are shown the results of the test of H_2, i.e., no significant difference between the established suburb and developing suburb categories. The

TABLE 6.3

H_1: A=B (MAJOR URBAN CORE CITY VS. MINOR URBAN CORE CITY) REVENUE DATA FOR 1962

Multivariate F Ratio = 4.678; p = .0002; df = 6 and 209

Source of Revenue	Mean Square	Univariate F*	p	Step-down F	p
1. State	1228.586	2.313	.130	2.313	.130
2. Intergovernmental	1023.349	.869	.352	.552	.458
3. Property tax	4070.070	1.072	.302	3.073	.081
4. Other local taxes	1782.457	20.119	.0001	19.683	.0001
5. Other local sources	652.483	2.410	.122	.294	.589
6. Utilities	23.896	.023	.878	1.613	.206

*df = 1 and 214

multivariate test of equality of mean vectors produced an F ratio of 1.331 with an associated probability of .245. The null hypothesis was accepted. The univariate and step-down F ratios for the six variables also are shown in Table 6.4.

TABLE 6.4

H_2: D=E (ESTABLISHED SUBURB VS. DEVELOPING SUBURB)
REVENUE DATA FOR 1962

Multivariate F Ratio = 1.331; p = .245; df = 6 and 209

Source of Revenue	Mean Square	Univariate F*	p	Step-down F	p
1. State	52.322	.098	.754	.098	.754
2. Intergovernmental	291.757	.248	.619	.291	.590
3. Property tax	8579.286	2.261	.134	2.615	.107
4. Other local taxes	156.113	1.762	.186	1.394	.239
5. Other local sources	809.668	2.991	.085	3.256	.073
6. Utilities	1981.889	1.945	.165	.303	.583

*df = 1 and 214

In Table 6.5 are shown the results of the test of H_3, i.e., no significant difference between the small city and small town categories. The multivariate F ratio of 4.144 with an associated probability of occurrence of .0006 was obtained. Thus, the null hypothesis was accepted at the .0001 level of confidence but would have been rejected at the .001 level. The univariate and step-down F ratios for the six variables indicated that two variables—revenue from the state and revenue from utilities—contributed most to the variance between the two categories.

TABLE 6.5

H_3: F=G (SMALL CITY VS. SMALL TOWN)
REVENUE DATA FOR 1962

Multivariate F Ratio = 4.144; p = .0006; df = 6 and 209

Source of Revenue	Mean Square	Univariate F*	p	Step-down F	p
1. State	7952.816	14.973	.0002	14.973	.0002
2. Intergovernmental	319.856	.272	.603	.001	.970
3. Property tax	1269.926	.335	.564	.492	.484
4. Other local taxes	11.024	.124	.725	.072	.789
5. Other local sources	426.959	1.577	.211	.444	.506
6. Utilities	11644.381	11.426	.0009	8.530	.004

*df = 1 and 214

Table 6.6 contains the results of the test of H_4, i.e., no significant difference in all remaining sources of variation. A multivariate F ratio of 4.166 was obtained in this test, and was significant at the .0001 level. Consequently, the null hypothesis was rejected. The univariate and step-down F ratios shown in Table 6.6 indicated that revenue from the state, revenue from property tax, revenue from other local taxes, and revenue from other local sources were major contributors to the significant difference which was found.

TABLE 6.6

H_4: B=C, C=D, E=F (ALL REMAINING SOURCES OF VARIATION)
REVENUE DATA FOR 1962

Multivariate F Ratio = 4.166; p = .0001; df = 18 and 592

Source of Revenue	Mean Square	Univariate F*	p	Step-down F	p
1. State	4824.067	9.082	.0001	9.082	.0001
2. Intergovernmental	1002.860	.851	.467	.286	.835
3. Property tax	14459.970	3.810	.011	4.215	.006
4. Other local taxes	546.248	6.166	.0005	5.552	.001
5. Other local sources	2106.038	7.779	.0001	4.845	.003
6. Utilities	4943.825	4.851	.003	.898	.443

*df = 3 and 214

Table 6.7 contains the discriminant function coefficients for the canonical variates included within H_4. Application of Bartlett's test for significance of successive comparisons indicated that roots 1-3 were significant at the .0001 level and that the other roots were not significant.

The variable which best discriminated with regard to canonical variate 1 was revenue from the state. With regard to canonical variate 2, revenue from property taxes was the most useful discriminator. In canonical variate 3, revenue from other local sources was the most potent discriminator. Canonical variate 1 accounted for over 71 percent of the canonical variation; canonical variate 2 accounted for nearly 20 percent of the variation; and canonical variate 3 accounted for about 9 percent of the canonical variation.

When the restriction with regard to further analysis after rejection of a null hypothesis was relaxed and all planned comparisons were completed, the results shown in Table 6.8 were obtained. A multivariate F ratio significant at beyond the .001 level was found in the comparisons involving the major urban core city and minor urban core city categories and the small city and small town categories. In the comparisons involving the minor urban core city vs. independent city, the independent city vs. established suburb, and the developing suburb vs. small city categories, multivariate F ratios significant at beyond the .01 level were obtained. As noted previously, the difference found when the established suburb and developing suburb categories were contrasted was not statistically significant.

TABLE 6.7

DISCRIMINANT FUNCTION COEFFICIENTS FOR THE CANONICAL VARIATES INCLUDED WITHIN H_4, PERCENTAGE OF CANONICAL VARIATION ATTRIBUTABLE TO EACH COMPARISON, AND SIGNIFICANCE OF SUCCESSIVE COMPARISONS, REVENUE DATA FOR 1962

	Raw Coefficients			Standardized Coefficients		
Source of Revenue	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3
1. State	.028	.016	-.002	.644	.361	-.511
2. Intergovernmental	.003	.005	-.000	.098	.178	-.011
3. Property taxes	-.003	-.014	-.008	-.198	-.860	-.479
4. Other local taxes	-.051	-.036	.010	-.481	-.336	.094
5. Other local sources	-.022	.029	-.038	-.360	.478	-.627
6. Utilities	-.006	.009	-.005	-.200	.281	-.173
% of canonical variation	71.18	19.80	9.02			
Bartlett's test for significance of successive comparisons:	Roots 1 through 3; Chi Square = 71.55, df = 18, p = .0001 Roots 2 through 3; Chi Square = 21.96, df = 10, p = .015 Root 3 through 3; Chi Square = 6.96, df = 4, p = .138					

TABLE 6.8

STANOARDIZED DISCRIMINANT FUNCTION COEFFICIENTS FOR THE SIX PLANNED COMPARISONS, REVENUE DATA FOR 1962

Source of Revenue	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
1. State	.404	-.948	.314	−.436	.602	.747
2. Intergovernmental	.120	−.158	.069	.072	−.095	.027
3. Property taxes	-.336	.408	−.334	.627	.417	−.248
4. Other local taxes	−.888	.280	−.360	−.287	−.036	.200
5. Other local sources	−.168	−.094	−.638	−.617	−.279	−.005
6. Utilities	.274	.231	−.276	−.213	−.276	−.653
Multivariate F ratio	4.678	3.282	3.759	1.331	3.420	4.144
df	6 & 209	6 & 209	6 & 209	6 & 209	6 & 209	6 & 209
p	.0002	.004	.002	.245	.003	.0006

Revenue from other local taxes was the variable which best discriminated in the comparison involving the major vs. the minor urban core city categories. Revenue from property taxes was the most useful discriminator in the comparisons involving the established suburb vs. the developing suburb and the developing suburb vs. the small city categories. Revenue from the state was the most useful discriminator in two comparisons—the minor urban core city vs. the independent city and the small city vs. the small town categories. Revenue from other local sources was the variable most useful in discriminating between the independent city and established suburb categories and also was useful as a discriminator between the established and developing suburb categories.

The planned order of comparisons between categories on expenditure data is shown in Table 6.9. Examination of the descriptive statistics indicated that it

TABLE 6.9

PLANNED ORDER OF COMPARISONS BETWEEN CATEGORIES ON EXPENDITURE DATA FOR 1962

Design Matrix	Category A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2				X	X		
Comparison 3						X	X
Comparison 4					X	X	
Comparison 5			X	X			
Comparison 6		X	X				

was unlikely that all planned comparisons could be completed before rejection of a null hypothesis. Consequently, H_1 tested for differences between the major and minor urban core city categories; H_2 tested for differences between the established and developing suburb categories; and H_3 tested for differences in all remaining sources of variation.

In Table 6.10 are displayed the results of the test of H_1, i.e., no significant difference between the major and minor urban core city categories. The multivariate F ratio obtained, .772, had a probability of occurrence of .738. Consequently, the null hypothesis was accepted. The univariate and step-down F ratios for the variables shown in Table 6.10 indicated that on no variable did a significant difference occur.

TABLE 6.10

H_1: A=B (MAJOR URBAN CORE CITY VS. MINOR URBAN CORE CITY) EXPENDITURE DATA FOR 1962

Multivariate F Ratio = .772; p = .738; df = 19 and 196

Purpose of Expenditure	Mean Square	Univariate F*	p	Step-down F	p
1. Education	895.198	.142	.706	.142	.706
2. Highways	56.766	.519	.472	.614	.434
3. Welfare	450.056	.219	.640	.105	.746
4. Hospitals	262.346	2.953	.087	3.416	.066
5. Health	1.593	.024	.876	.004	.949
6. Police protection	129.703	3.309	.070	2.271	.133
7. Fire protection	1.824	.094	.759	1.249	.265
8. Sewerage	.153	.028	.868	.019	.890
9. Sanitation	21.535	3.015	.084	.636	.426
10. Parks, etc.	80.083	4.537	.034	1.750	.187
11. Housing and urban renewal	7.115	.088	.767	.026	.873
12. Libraries	1.958	.739	.391	.001	.975
13. Financial administration	1.056	.203	.652	1.012	.316
14. General control	.986	.097	.756	.660	.418
15. Public buildings	2.383	.156	.693	.115	.735
16. Unallocable	3.435	.019	.891	.092	.762
17. Interest on debt	364.910	.618	.432	.234	.629
18. Utilities	1588.883	1.064	.304	2.227	.137
19. Capital outlay	72.112	.181	.671	.343	.559

*df = 1 and 214

In Table 6.11 are reported the results of the test of H_2, i.e., no significant difference between the established suburb and developing suburb categories. A multivariate F ratio of 1.968 was obtained in this test. The associated probability of occurrence of this ratio was .012. The null hypothesis was accepted. The univariate and step-down F ratios indicated that only on expenditure per capita for education did a significant difference occur between the two categories.

TABLE 6.11

H_2: D=E (ESTABLISHED SUBURB VS. DEVELOPING SUBURB) EXPENDITURE DATA FOR 1962

Multivariate F Ratio = 1.968; p = .012; df = 19 and 196

Purpose of Expenditure	Mean Square	Univariate F*	p	Step-down F	p
1. Education	117706.335	18.732	.0001	18.732	.0001
2. Highways	186.270	1.702	.193	3.567	.060
3. Welfare	97.532	.047	.828	.040	.842
4. Hospitals	16.260	.183	.669	.040	.843
5 Health	2.303	.035	.851	1.266	.262
6. Police protection	53.283	1.359	.245	2.005	.158
7. Fire protection	13.899	7.18	.398	.021	.884
8. Sewerage	11.184	2.022	.156	.119	.731
9. Sanitation	11.401	1.596	.208	1.231	.269
10. Parks, etc.	19.523	1.106	.294	.271	.603
11. Housing and urban renewal	5.394	.067	.796	.001	.977
12. Libraries	3.769	1.423	.234	.016	.899
13. Financial administration	8.126	1.566	.212	5.943	.016
14. General control	6.582	.648	.422	.065	.800
15. Public buildings	.406	.027	.870	.011	.917
16. Unallocable	100.458	.552	.458	1.781	.184
17. Interest on debt	331.023	.561	.455	1.995	.160
18. Utilities	126.833	.085	.771	.078	.781
19. Capital outlay	237.264	.596	.441	.284	.595

*df = 1 and 214

The results of the test of H_3, i.e., no significant difference in all remaining sources of variation, are shown in Table 6.12. The multivariate F ratio obtained, 4.334, was significant at the .0001 level. The null hypothesis was rejected. The univariate and step-down F ratios indicated that the variables which contributed most to the significant difference were expenditure for education, for highways, for fire protection, and for libraries.

Table 6.13 contains the discriminant function coefficients for the canonical variates included within H_3. Application of Bartlett's test for significance of successive comparisons revealed that roots 1-4 were significant at the .0001 level; that roots 2-4 were significant at the .0009 level; and that the remaining roots were not significant. Canonical variate 1 accounted for nearly 76 percent of the canonical variation, and canonical variate 2 accounted for over 17 percent of the canonical variation. The remaining two canonical variates together accounted for only slightly over 7 percent of the canonical variation.

The discriminant function coefficients indicated that with regard to canonical variate 1, expenditure for fire protection was the most useful discriminator. Expenditure for highways was the variable which best discriminated in canonical variate 2. With regard to canonical variate 3, expenditure for housing and urban renewal was the most potent discriminator. In canonical variate 4, expenditure for police protection was the most useful discriminator.

TABLE 6.12

H_3: B=C, C=D, E=F, F=G (ALL REMAINING SOURCES OF VARIATION)
EXPENDITURE DATA FOR 1962

Multivariate F Ratio = 4.334; p = .0001; df = 76 and 774

Purpose of Expenditure	Mean Square	Univariate F*	p	Step-down F	p
1. Education	84642.445	13.470	.0001	13.470	.0001
2. Highways	1147.485	10.488	.0001	9.906	.0001
3. Welfare	402.429	.196	.940	.537	.709
4. Hospitals	192.481	2.167	.074	2.569	.039
5. Health	90.326	1.389	.239	2.511	.043
6. Police protection	139.191	3.551	.008	4.897	.001
7. Fire protection	386.308	19.942	.0001	14.133	.0001
8. Sewerage	1.092	.198	.940	.798	.528
9. Sanitation	58.745	8.225	.0001	4.427	.002
10. Parks, etc.	76.112	4.312	.002	4.955	.001
11. Housing and urban renewal	263.016	3.256	.013	2.198	.071
12. Libraries	12.561	4.742	.001	5.485	.0004
13. Financial administration	1.359	.262	.902	.279	.891
14. General control	27.751	2.733	.030	1.612	.173
15. Public buildings	13.655	.897	.467	1.059	.378
16. Unallocable	463.665	2.548	.040	2.678	.033
17. Interest on debt	570.319	.967	.427	1.412	.232
18. Utilities	4266.015	2.856	.025	1.156	.331
19. Capital outlay	5030.587	12.633	.0001	3.545	.008

*df = 4 and 214

The restriction against further analysis after rejection of an hypothesis was then relaxed and all planned comparisons were made. The results are displayed in Table 6.14. A multivariate F ratio significant at beyond the .0001 level was found in the comparisons involving the minor urban core city and independent city categories, the independent city and established suburb categories, the developing suburb and small city categories, and the small city and small town categories. As reported previously, in the comparisons involving the major and minor urban core cities and the established and developing suburbs the multivariate F ratios obtained were not statistically significant.

The variable which proved to be the most potent discriminator in the comparison of the major and minor urban core city categories was expenditure for police protection. This variable also best discriminated in the comparison of the small city and small town categories. Expenditure for fire protection was the variable most useful in discriminating between the minor urban core city and independent city categories, and between the independent city and established suburb categories. In the comparisons involving the established and developing suburb categories and the developing suburb and small city categories, expenditure for education was the most potent discriminator.

TABLE 6.13

DISCRIMINANT FUNCTION COEFFICIENTS FOR THE CANONICAL VARIATES INCLUDED WITHIN H_3, PERCENTAGE OF CANONICAL VARIATION ATTRIBUTABLE TO EACH COMPARISON, AND SIGNIFICANCE OF SUCCESSIVE COMPARISONS, EXPENDITURE DATA FOR 1962

	Raw Coefficients				Standardized Coefficients			
Purpose of Expenditure	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4
1. Education	.005	-.007	-.001	-.007	.424	-.548	-.047	-.567
2. Highways	.045	.066	.029	.019	.467	.696	.308	.198
3. Welfare	-.002	-.0004	-.002	.003	-.078	-.019	-.072	.156
4. Hospitals	-.011	.007	.040	-.051	-.010	.067	.372	-.480
5. Health	.001	.051	-.059	-.016	.009	.414	-.479	-.130
6. Police protection	.101	-.056	-.021	.135	.631	-.349	-.131	.845
7. Fire protection	-.188	.017	.086	-.013	-.826	.076	.379	-.056
8. Sewerage	.159	-.041	-.183	.060	.374	-.097	-.430	.140
9. Sanitation	-.083	.002	.026	.101	-.222	.006	.070	.271
10. Parks, etc.	-.010	-.063	.009	-.070	-.420	-.265	.038	-.295
11. Housing and urban renewal	-.001	.023	-.061	.003	-.011	.207	-.552	.03[illegible]

TABLE 6.13 (cont.)

Purpose of Expenditure	Raw Coefficients				Standiardized Coefficients			
	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4
12. Libraries	-.252	-.040	-.074	-.256	-.410	-.065	-.121	-.416
13. Financial administration	.007	-.070	-.076	.006	.016	-.160	-.173	.013
14. General control	.045	.088	.095	-.035	.142	.279	.304	-.111
15. Public buildings	-.037	.016	-.041	-.042	-.144	.061	-.160	-.162
16. Unallocable	.025	-.021	.014	.010	.339	-.289	.184	.136
17. Interest on debt	-.010	-.004	-.004	.002	-.251	-.104	-.099	.041
18. Utilities	-.001	.005	.004	-.004	-.021	.210	.146	-.138
19. Capital outlay	-.019	.007	.001	-.015	-.389	.144	.029	-.306
% of canonical variation	75.76	17.07	4.01	3.16				

Bartlett's test for significance of successive comparisons:
Roots 1 through 4; Chi Square = 287.59, df = 76, p = .0001
Roots 2 through 4; Chi Square = 92.39, df = 54, p = .0009
Roots 3 through 4; Chi Square = 29.66, df = 34, p = .680
Roots 4 through 4; Chi Square = 13.13, df = 16, p = .663

TABLE 6.14

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS AND MULTIVARIATE F RATIOS FOR THE PLANNED COMPARISONS, EXPENDITURE DATA FOR 1962

Purpose of Expenditure	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
1. Education	−.085	.344	.375	−.923	.765	.313
2. Highways	−.274	.599	.327	.310	−.489	.500
3. Welfare	−.176	−.104	−.026	−.094	−.042	−.072
4. Hospitals	.395	−.002	−.274	−.005	−.007	−.008
5. Health	−.076	.145	.023	.180	−.346	−.276
6. Police protection	.655	.371	.841	.144	.396	.672
7. Fire protection	−.454	−.756	−.882	.031	−.374	−.566
8. Sewerage	−.179	.380	.482	−.085	.204	.166
9. Sanitation	.123	−.253	−.172	.306	−.142	−.176
10. Parks, etc.	.525	−.424	−.429	.221	.136	−.369
11. Housing and urban renewal	.019	.044	.078	−.045	−.197	−.276
12. Libraries	.016	−.341	−.439	−.070	−.018	−.475
13. Financial administration	−.254	−.029	.074	−.466	.149	−.044
14. General control	−.236	.226	.014	.110	−.177	.210
15. Public buildings	−.039	−.093	−.145	.066	−.079	−.231
16. Unallocable	−.087	.221	.351	−.446	.365	.433
17. Interest on debt	−.116	−.272	−.196	.312	−.009	−.244
18. Utilities	−.481	.058	−.105	−.080	−.172	.001
19. Capital outlay	.197	−282	−.456	.118	−.221	−.393
Multivariate F Ratio	.772	8.891	6.050	1.968	3.506	3.059
df	19 & 196	19 & 196	19 & 196	19 & 196	19 & 196	19 & 196
p	.738	.0001	.0001	.012	.0001	.0001

Analyses of Data for 1967

In the first portion of this section, descriptive statistics with regard to the seven categories will be presented. In the second portion, the results of multivariate analyses of revenue and expenditure variables will be reported.

Mean Revenue and Expenditure

In Table 6.15 are shown the means and standard deviations of the six revenue variables and nineteen expenditure variables for the combined revenues and expenditures of the school district, and the municipality and the county most closely associated with the school district, for each of the seven categories. Revenue from property taxes was the most important revenue source in each of the seven categories, and revenue from the state was the second ranking revenue source in each of the seven categories. Mean revenue from property taxes ranged from a high of $178 per capita in the developing suburb category to a low of $106 per capita in the small city category. Mean revenue from the state ranged from a high of $110 per capita in the developing suburb category to a low of

TABLE 6.15

MEANS AND STANDARD DEVIATIONS OF SIX REVENUE VARIABLES AND NINETEEN EXPENDITURE VARIABLES FOR THE COMBINED REVENUES AND EXPENDITURES OF THE SCHOOL DISTRICT, AND THE MUNICIPALITY AND COUNTY ASSOCIATED WITH THE SCHOOL DISTRICT, BY CATEGORIES FOR 1967 (DATA STANDARDIZED ON A PER CAPITA BASIS)

Variable	Category A		Category B		Category C		Category D		Category E		Category F		Category G	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Revenue from:														
1. State	72	71	55	34	74	38	89	36	110	49	56	30	86	42
2. Intergovernmental	47	44	36	34	43	25	39	20	46	35	41	34	51	30
3. Property taxes	152	81	127	95	140	65	154	75	178	110	106	60	126	110
4. Other local taxes	25	31	14	24	12	13	4	5	7	7	9	12	8	10
5. Other local sources	47	23	41	25	46	24	30	18	27	10	32	16	35	15
6. Utilities	28	24	41	58	45	48	19	21	18	14	46	58	28	13
Expenditure for:														
1. Education	110	47	107	31	113	42	178	54	260	94	111	40	155	56
2. Highways	14	9	16	7	25	12	23	8	21	8	25	14	33	22
3. Public welfare	16	26	20	58	18	22	19	15	22	16	10	14	22	55
4. Hospitals	13	15	7	15	13	18	12	20	7	7	7	14	9	12
5. Health	5	3	3	2	4	4	3	2	4	2	2	2	2	2
6. Police protection	22	8	16	11	15	5	15	9	13	5	13	5	13	5
7. Fire protection	13	5	13	9	12	6	5	4	3	2	8	5	4	2

TABLE 6.15 (cont.)

Variable	Category A Mean	Category A S.D.	Category B Mean	Category B S.D.	Category C Mean	Category C S.D.	Category D Mean	Category D S.D.	Category E Mean	Category E S.D.	Category F Mean	Category F S.D.	Category G Mean	Category G S.D.
8. Sewerage	3	1	4	2	3	2	4	5	4	3	4	3	4	2
9. Sanitation other than sewerage	9	5	7	6	6	3	5	3	4	2	5	3	6	13
10. Parks, etc.	14	8	9	6	8	7	8	8	7	5	6	4	5	4
11. Housing and urban renewal	11	11	8	15	4	10	0	0	5	25	4	11	0	0
12. Libraries	3	2	2	2	3	3	2	2	1	1	2	4	1	1
13. Financial administration	4	1	5	3	4	2	4	2	4	5	5	3	4	2
14. General control	7	3	7	4	7	3	9	6	8	2	8	4	10	5
15. Public buildings	3	2	4	3	5	7	5	6	4	2	6	10	4	1
16. Unallocable	23	20	21	24	16	8	21	22	21	20	11	8	16	10
17. Interest on debt	9	5	17	54	6	4	5	3	5	5	4	4	4	3
18. Utilities	21	27	27	37	38	46	16	17	17	16	33	41	29	15
19. Capital outlay	55	20	43	38	54	42	33	33	29	26	37	29	28	15

NOTE: Expenditure for education includes capital outlay reported by school districts; expenditures for all municipal and county functions are exclusive of capital outlay.

Category A = Major Urban Core City
Category B = Minor Urban Core City
Category C = Independent City
Category D = Established Suburb
Category E = Developing Suburb
Category F = Small City
Category G = Small Town

$55 per capita in the minor urban core city category. Revenue from other local taxes was the least important source of revenue in each of the seven categories, ranging from a high mean of $25 per capita in the major urban core city category to a low mean of $4 per capita in the established suburb category.

The importance of the remaining three revenue sources varied somewhat from one category to another. Revenue from other governmental sources was the third ranking revenue source in the major urban core city category, the established suburb category, the developing suburb category, and the small town category; the fourth ranking revenue source in the small city category; and the fifth ranking revenue source in the minor urban core city category and the independent city category. Mean revenue from other governmental sources ranged from a high of $51 per capita in the small town category to a low of $36 per capita in the minor urban core city category.

Revenue from other local sources was the third ranking revenue source in the major urban core city, the minor urban core city, and the independent city categories; the fourth ranking revenue source in the established suburb, developing suburb, and small town categories; and the fifth ranking revenue source in the small city category. Mean revenue from other local sources ranged from a high of $47 per capita in the major urban core city category to a low of $27 per capita in the developing suburb category.

Revenue from utilities ranked as the third leading revenue source in the minor urban core city and small city categories; the fourth ranking revenue source in the independent city category; and the fifth ranking revenue source in the major urban core city, established suburb, developing suburb, and small town categories. Mean revenue from utilities ranged from a high of $46 per capita in the small city category to a low of $18 per capita in the developing suburb category.

Expenditure for education constituted the largest component of expenditure in each of the seven categories, ranging from a high mean expenditure of $260 per capita in the developing suburb category to a low mean expenditure of $107 per capita in the minor urban core city category.

Expenditure for capital outlay was the second largest component of expenditure in all categories except the small town category, where it ranked fourth. The mean expenditure for capital outlay ranged from a high of $55 per capita in the major urban core city category to a low of $28 per capita in the small town category.

A number of functions—among them highways, public welfare, and police protection—consistently ranked among the top components of expenditure in each of the seven categories. The mean expenditure per capita for highways was greatest in the small town category and smallest in the major urban core city category. The mean expenditure per capita for hospitals was substantially higher in the major urban core city, the minor urban core city, and the established suburb categories than it was in the other four categories. The mean expenditure per capita for police protection was considerably higher in the major urban core city category than it was in the other six categories, and the mean expenditure per capita for fire protection was considerably higher in the three large city categories than in the other four categories. The mean expenditure per capita for

a number of functions was quite similar in each of the seven categories. Among the functions for which relatively little difference in expenditure per capita was apparent were sewerage, financial administration, and general control.

Analyses of Variance

The planned order of comparisons between categories on revenue date for 1967 is shown in Table 6.16. Examination of the means and standard deviations indicated that it was unlikely that all planned comparisons could be completed prior to rejection of a null hypothesis. Consequently, H_1 tested for differences between the major and minor urban core city categories; H_2 tested for differences between the established and developing surburb categories; H_3 tested for differences between the small city and small town categories; and H_4 tested for differences in all remaining sources of variation.

TABLE 6.16

PLANNED ORDER OF COMPARISONS BETWEEN CATEGORIES ON REVENUE DATA FOR 1967

Design Matrix	Category A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2				X	X		
Comparison 3						X	X
Comparison 4					X	X	
Comparison 5			X	X			
Comparison 6		X	X				

In Table 6.17 are disolayed the results of the test of H_1, i.e., no significant difference between the major and minor urban core city categories. The multivariate test of equality of mean vectors produced an F ratio of 3.269 with an associated probability of occurrence of .004. The null hypothesis was accepted. The univariate and step-down F ratios for each of the variables shown in Table 6.17 indicated that only on revenue from other local taxes did a substantial variation occur.

Table 6.18 displays the results obtained from the test of H_2, i.e., no significant difference between the established suburb and developing suburb categories. A multivariate F ratio of 1.387 was obtained. The probability of occurrence associated from this F ratio was .221. Consequently, the null hypothesis was accepted. Univariate and step-down F ratios for each of the variables also are shown.

In Table 6.19 are shown the results of the test of H_3, i.e., no significant difference between the small city and small town categories. The multivariate

TABLE 6.17

H_1: A=B (MAJOR URBAN CORE CITY VS. MINOR URBAN CORE CITY)
REVENUE DATA FOR 1967

Multivariate F Ratio · 3.269; p = .004; df = 6 and 209

Source of Revenue	Mean Square	Univariate F*	p	Step-down F	p
1. State	537.257	.318	.573	.318	.573
2. Intergovernments	268.748	.278	.599	.806	.370
3. Property tax	2219.468	.290	.591	.328	.567
4. Other local taxes	3117.120	14.165	.0003	14.660	.0002
5. Other local sources	1767.862	4.832	.029	.731	.394
6. Utilities	272.025	.172	.678	2.576	.110

*df = 1 and 214

TABLE 6.18

H_2: D=E (ESTABLISHED SUBURB VS. DEVELOPING SUBURB)
REVENUE DATA FOR 1967

Multivariate F Ratio = 1.387; p = .221; df = 6 and 209

Source of Revenue	Mean Square	Univariate F*	p	Step-down F	p
1. State	750,927	.445	.505	.445	.505
2. Intergovernmental	1162,990	1.202	.274	2.549	.112
3. Property Tax	8601,698	1.124	.290	2.044	.154
4. Other local taxes	313,450	1.424	.234	1.629	.203
5. Other local sources	69.174	.189	.664	.029	.865
6. Utilities	3468,803	2.200	.140	1.606	.206

*df = 1 and 214

test of equality of mean vectors produced an F ratio of 2.237 which had a probability of occurrence of .041. Again, the null hypothesis was accepted. Univariate and step-down F ratios for each of the variables indicated that only revenue from the state varied substantially between the two categories.

In Table 6.20 the results of the test of H_4, i.e., no significant difference in all remaining sources of variation, are displayed. The multivariate F ratio obtained, 4.904, was significant at the .0001 level. Consequently, the null hypothesis was rejected. The univariate and step-down F ratios for each of the variables indicated that revenue from the state and revenue from other local taxes were major contributors to the significant difference.

In Table 6.21 are displayed the discriminant function coefficients for the canonical variates included within H_4. Application of Bartlett's test for significance of successive comparisons indicated that roots 1-3 were significant at beyond the .01 level, and that root 3 was not significant.

TABLE 6.19

H_3: F=G (SMALL CITY VS. SMALL TOWN)
REVENUE DATA FOR 1967

Multivariate F Ratio - 2.237; p = .041; df = 6 and 209

Source of Revenue	Mean Square	Univariate F*	p	Step-down F	p
1. State	15801.513	9.367	.002	9.367	.002
2. Intergovernmental	1677.672	1.733	.190	.021	.885
3. Property tax	7068.986	.923	.338	.059	.809
4. Other local taxes	2.178	.010	.921	.209	.648
5. Other local sources	163.425	.447	.505	1.562	.213
6. Utilities	5824.044	3.693	.056	2.235	.136

*df = 1 and 214

TABLE 6.20

H_4: B=C, C=D, E=F (ALL REMAINING SOURCES OF VARIATION)
REVENUE DATA FOR 1967

Multivariate F Ratio = 4.338; p = .0001; df = 18 and 592

Source of Revenue	Mean Square	Univariate F*	p	Step-down F	p
1. State	17146.737	10.164	.0001	10.164	.0001
2. Intergovernmental	421.024	.435	.728	2.684	.048
3. Property tax	29143.112	3.807	.011	2.975	.033
4. Other local taxes	1315.989	5.980	.001	6.930	.0002
5. Other local sources	3447.155	9.422	.0001	4.424	.005
6. Utilities	6937.800	4.399	.005	1.872	.135

*df = 3 and 214

The discriminant function coefficients indicated that, with regard to canonical variate 1, revenue from the state was the most useful discriminator. Revenue from other governmental sources was the variable which best discriminated with regard to canonical variate 2. In canonical variate 3, revenue from other local sources was the most potent discriminator. Canonical variate 1 accounted for over 70 percent of the canonical variation; canonical variate 2 accounted for nearly 21 percent of the variation; and canonical variate 3 accounted for about 9 percent of the variation.

By relaxing the restriction with regard to further analysis after rejection of a null hypothesis, it was possible to complete all planned comparisons, and the results of these comparisons are shown in Table 6.22. A difference statistically significant at beyond the .0001 level was found in the comparison of the

TABLE 6.21

DISCRIMINANT FUNCTION COEEFICIENTS FOR THE CANONICAL VARIATES INCLUDED WITHIN H , PERCENTAGE OF CANONICAL VARIATION ATTRIBUTABLE TO EACH COMPARISDN, AND SIGNIFICANCE OF SUCCESSIVE COMPARISONS, REVENUE DATA FOR 1967

	Raw Coefficients			Standardized Coefficients		
Source of Revenue	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3
1. State	.018	-.004	-.015	.759	-.178	-.597
2. Intergovernmental	-.013	.024	.000	-.400	.738	.000
3. Property taxes	.003	-.008	.003	.220	-.693	.228
4. Other local taxes	-.026	-.022	.045	-.420	-.332	.666
5. Other local sources	-.016	-.028	-.038	-.302	-.533	-.718
6. Utilities	-.004	.008	-.015	-.179	.338	-.577
% of canonical variation	70.37	20.64	8.99			
Bartlett's test for significance of successive comparisons:	Roots 1-3 Chi Square = 83.38, df = 18, p = .0001 Roots 2-3 Chi Square = 26.50, df = 10, p = .003 Root 3 Chi Square = 8.18, df = 4, p = .085					

TABLE 6.22

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS FOR THE PLANNED COMPARISONS, REVENUE DATA FOR 1967

Source of Revenue	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
1. State	.374	.901	.195	−.396	.797	−.922
2. Intergovernmental	−.110	−.035	.028	.880	−.626	.132
3. Property taxes	−.142	−.128	−.029	−.580	.510	.096
4. Other local taxes	−.903	−.507	−.132	.355	−.095	.129
5. Other local sources	−.260	−.196	−.816	−.118	−.056	−.423
6. Utilities	.400	.007	−.269	.474	−.281	.445
Multivariate F ratio	3.269	3.448	3.420	1.387	5.951	2.237
df	6 & 209	6 & 209	6 & 209	6 & 209	6 & 209	6 & 209
p	.004	.003	.003	.221	.0001	.041

developing suburb category and the small city category. In the comparisons involving the minor urban core city category vs. the independent city category and the independent city category vs. the established suburb category, multivariate F ratios statistically significant at beyond the .01 level were obtained.

Revenue from other local taxes was the variable which best discriminated between the major urban core city and minor urban core city categories. Revenue from the state proved to be the most useful discriminator in the comparisons involving the minor urban core city vs. the independent city, the developing suburb vs. the small city and the small city vs. the small town categories. In the comparison of the independent city category with the established suburb category, revenue from other local sources was the most useful discriminator. Revenue from other governmental sources best discriminated between the established and developing suburb categories.

The planned order of comparisons between categories on expenditure data is shown in Table 6.23. After examination of the descriptive statistics for each category, it was deemed unlikely that all planned comparisons could be completed before rejection of a null hypothesis. Consequently, H_1 tested for differences between the major urban core city and minor urban core city categories; H_2 tested for differences in all remaining sources of variation.

In Table 6.24 are displayed the results of the test of H_1, i.e., no significant difference between the major urban core city and minor urban core city categories. A multivariate F ratio of 1.334, with an associated probability of occurrence of .166, was obtained. The null hypothesis was accepted. Univariate and step-down F ratios for each of the variables also are shown.

The results of the test of H_2, i.e., no significant difference in all remaining sources of variation, are displayed in Table 6.25. A multivariate F ratio of 5.153 was obtained, which was significant at the .0001 level. The null hypothesis was rejected. The univariate and step-down F ratios for each variable indicated that expenditure for education, for highways, for health, and for fire protection were major contributors to the significant difference which was found.

TABLE 6.23

PLANNED ORDER OF COMPARISONS BETWEEN CATEGORIES ON EXPENDITURE DATA FOR 1967

Design Matrix	Category A	B	C	D	E	F	G
Comparison 1	X	X					
Comparison 2				X	X		
Comparison 3						X	X
Comparison 4					X	X	
Comparison 5			X	X			
Comparison 6		X	X				

TABLE 6.24

H_1: A=B (MAJOR URBAN CORE CITY VS. MINOR URBAN CORE CITY) EXPENDITURE DATA FOR 1967

Multivariate F Ratio = 1.334; p = .166; df = 19 and 196

Purpose of Expenditure	Mean Square	Univariate F*	p	Step-down F	p
1. Education	100.687	.032	.858	.032	.858
2. Highways	65.434	.407	.524	.478	.490
3. Welfare	148.267	.121	.728	.038	.846
4. Hospitals	293.042	1.323	.251	1.476	.226
5. Health	17.943	2.772	.097	3.424	.066
6. Police protection	346.077	6.758	.010	5.792	.017
7. Fire protection	.003	.000	.991	5.257	.023
8. Sewerage	4.300	.499	.481	.819	.366
9. Sanitation	34.920	.898	.344	.002	.963
10. Parks, etc.	217.979	6.112	.014	1.776	.184
11. Housing and urban renewal	125.507	.729	.394	.409	.523
12. Libraries	6.136	1.011	.316	.292	.590
13. Financial administration	.875	.114	.736	2.184	.141
14. General control	1.900	.124	.725	.420	.518
15. Public buildings	9.817	.311	.577	.494	.483
16. Unallocable	47.582	.164	.686	.285	.592
17. Interest on debt	600.297	1.314	.253	.716	.398
18. Utilities	333.396	.340	.561	1.010	.316
19. Capital outlay	1380.933	1.422	.234	.404	.526

df = 1 and 214

TABLE 6.25

H_2: B=C, C=D, D=E, E=F, F=G (ALL REMAINING SOURCES OF VARIATION)
EXPENDITURE DATA FOR 1967

Multivariate F Ratio = 5.153; p = .0001; df = 95 and 958

Purpose of Expenditure	Mean Square	Univariate F*	p	Step-down F	p
1. Education	124525.605	39.599	.0001	39.599	.0001
2. Highways	1355.367	8.429	.0001	9.620	.0001
3. Welfare	641.044	.524	.758	2.271	.049
4. Hospitals	205.162	.926	.465	.792	.557
5. Health	15.927	2.461	.034	8.880	.0001
6. Police protection	129.952	2.541	.029	4.271	.001
7. Fire protection	632.116	22.973	.0001	14.174	.0001
8. Sewerage	2.463	.286	.921	.833	.527
9. Sanitation	75.358	1.939	.089	.882	.494
10. Parks, etc.	151.561	4.250	.001	3.986	.002
11. Housing and urban renewal	441.536	2.565	.028	1.212	.305
12. Libraries	23.201	3.823	.003	1.200	.311
13. Financial administration	4.145	.538	.747	2.372	.041
14. General control	48.536	3.162	.009	2.540	.030
15. Public buildings	33.036	1.048	.390	1.231	.296
16. Unallocable	649.626	2.246	.051	1.623	.156
17. Interest on debt	788.791	1.726	.130	2.151	.061
18. Utilities	2687.194	2.738	.020	1.612	.158
19. Capital outlay	3985.540	4.105	.002	.893	.487

*df = 5 and 214

In Table 6.26 are displayed the discriminant function coefficients for the canonical variates included within H_2. Bartlett's test for significance of successive comparisons indicated that roots 1-5 and 2-5 were significant at beyond the .0001 level, and that the three remaining roots were not significant.

With regard to canonical variate 1, which accounted for nearly 69 percent of the canonical variation, expenditure for education proved to be the most useful discriminator. In canonical variate 2, which accounted for nearly 21 percent of the variance, expenditure for highways was found to be the most potent discriminator. With regard to canonical variates 3, 4, and 5, which together accounted for only about 10 percent of the canonical variation, expenditure for police protection, expenditure for housing and urban renewal, and expenditure for sanitation, respectively, proved to be the best discriminators.

When the restriction regarding further analysis after rejection of a null hypothesis was relaxed and all planned comparisons were completed, the results shown in Table 6.27 were obtained. Multivariate F ratios which were statistically significant at beyond the .0001 level were obtained in the comparisons involving the minor urban core city and independent city categories, the independent city and established suburb categories, the established suburb and developing suburb

TABLE 6.26

DISCRIMINANT FUNCTION COEFFICIENTS FOR THE CANONICAL VARIATES INCLUDED WITHIN H_2, PERCENTAGE OF CANONICAL VARIATION ATTRIBUTABLE TO EACH COMPARISON AND SIGNIFICANCE OF SUCCESSIVE COMPARISONS, EXPENDITURE DATA FOR 1967

	Raw Coefficients					Standardized Coefficients				
Purpose of Expenditure	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5
1. Education	.015	-.012	-.009	-.001	.004	.852	-.680	-.495	-.068	.224
2. Highways	.017	.066	-.019	-.006	.033	.213	.832	-.237	-.076	.421
3. Welfare	-.002	-.004	.006	-.003	.004	-.076	-.136	.225	-.113	.136
4. Hospitals	.006	.006	.008	.037	-.005	.085	.084	.117	.546	-.075
5. Health	-.177	.030	-.073	.152	.017	-.450	.076	-.186	.386	.044
6. Police protection	.010	.035	.083	-.011	-.028	.071	.247	.591	-.081	-.201
7. Fire protection	-.144	-.070	-.100	-.018	.062	-.754	-.368	-.525	-.094	.325
8. Sewerage	.058	-.003	.040	-.025	-.095	.171	-.008	.117	-.072	-.278
9. Sanitation	-.003	.032	.037	-.007	.079	-.017	.202	.229	-.042	.495
10. Parks, etc.	-.036	-.077	.069	.021	-.005	-.217	-.462	.415	.126	-.028
11. Housing and urban renewal	-.003	-.011	-.001	-.046	-.009	-.045	-.143	-.008	-.606	-.120

TABLE 6.26 (cont.)

Purpose of Expenditure	Raw Coefficients					Standardized Coefficients				
	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5	Canonical Var. 1	Canonical Var. 2	Canonical Var. 3	Canonical Var. 4	Canonical Var. 5
12. Libraries	-.010	-.026	-.107	.013	-.189	-.024	-.064	-.263	.031	-.465
13. Financial administration	.061	-.090	-.078	-.178	-.029	.170	-.250	-.217	-.495	-.081
14. General control	.050	.094	.056	.027	-.049	.196	.366	.218	.106	-.190
15. Public buildings	-.006	.011	-.047	.027	-.085	-.034	.061	-.264	.153	-.479
16. Unallocable	.018	-.002	.014	.021	.008	.312	-.032	.231	.357	.142
17. Interest on debt	-.012	-.008	.003	-.011	.008	-.246	-.176	.063	-.242	.176
18. Utilities	.000	.001	-.017	-.001	.010	.003	.035	-.529	-.028	.313
19. Capital outlay	-.002	-.004	-.008	.012	.005	-.072	-.111	-.264	.383	.150
% of canonical variation	68.90	20.99	5.38	2.78	1.96					
Bartlett's test for significance of successive comparisons:	Roots 1-5 Chi Square = 414.68; df = 95, p = .0001 Roots 2-5 Chi Square = 171.61, df = 72, p = .0001 Roots 3-5 Chi Square = 64.00, df = 51, p = .105 Roots 4-5 Chi Square = 30.66, df = 32, p = .534 Root 5 Chi Square = 12.78, df = 15, p = .619									

TABLE 6.27

STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS FOR THE SIX PLANNED CAMPARISONS, EXPENDITURE DATA FOR 1967

Purpose of Expenditure	A vs. B	B vs. C	C vs. D	D vs. E	E vs. F	F vs. G
1. Education	−.398	−.602	.654	−1.188	.988	−.444
2. Highways	−.206	−.511	.141	.170	−.538	−.537
3. Welfare	−.150	.178	−.007	.011	.044	.003
4. Hospitals	.236	−.139	.022	.200	.106	−.153
5. Health	.400	.313	−.544	.352	−.278	.326
6. Police protection	.904	−.046	.257	.346	−.109	−.187
7. Fire protection	−.643	.745	−.867	−.020	−.260	.728
8. Sewerage	−.154	−.139	.226	−.046	.116	−.041
9. Sanitation	.072	.014	.018	.139	−.171	−.309
10. Parks, etc.	.336	.429	−.128	.077	.266	.212
11. Housing and urban renewal	.068	.140	.069	−.204	−.034	.200
12. Libraries	.094	−.031	−.063	−.054	.036	.296
13. Financial administration	−.316	−.063	.192	−.464	.186	.082
14. General control	−.100	−.289	.247	.232	−.111	−.258
15. Public buildings	−.180	−.078	−.090	.059	−.040	.259
16. Unallocable	−.067	−.254	.280	−.047	.299	−.400
17. Interest on debt	−.197	.330	−.191	−.010	−.070	.191
18. Utilities	−.220	−.095	−.154	−.249	−.078	−.009
19. Capital outlay	.162	.029	−.220	−.044	.089	.053
Multivariate F ratio	1.334	11.615	8.372	3.760	7.059	2.806
df	19&196	19&196	19&196	19&196	19&196	19&196
p	.166	.0001	.0001	.0001	.0001	.0002

categories, and the developing suburb and small city categories. A difference statistically significant at beyond the .001 level was obtained in the comparison of the small city and small town categories. As noted previously, the multivariate F ratio obtained in the comparison of the major and minor urban core city categories was not statistically significant.

Expenditure for police protection was the variable which best discriminated between the major and minor urban core city categories. Expenditure for fire protection was the variable which best discriminated between the minor urban core city and independent city categories, the independent city and established suburb categories, and the small city and small town categories. In the comparisons involving the established and developing suburb categories and developing suburb and small city categories, expenditure for education was the most potent discriminator.

Changes from 1962 to 1967

While measurements taken at two points in time are not sufficient to define a trend, they may foreshadow future developments. Similarities and differences observed in the results of the analyses of data for 1962 and 1967 will be noted in this section.

Mean Revenue and Expenditure

No change occurred between 1962 and 1967 in the relative importance of the two major revenue sources. In both years, revenue from property taxes was the most important source of revenue for each of the seven categories, and revenue from the state was the second ranking revenue source for each of the seven categories. However, a substantial change did occur between 1962 and 1967 in the amount of revenue per capita obtained from each source. For example, in the major urban core city category mean revenue from property taxes increased from $124 per capita in 1962 to $152 per capita in 1967, and mean revenue from state sources increased from $44 per capita in 1962 to $72 per capita in 1967. In the small town category, mean revenue from property taxes increased from $91 per capita in 1962 to $126 per capita in 1967; mean revenue from state sources increased from $64 per capita in 1962 to $86 per capita in 1967. Revenue from other governmental sources became a more important source of revenue, especially in the major urban core city category. In that category, revenue from other governmental sources ranked sixth in importance in 1962 ($18 per capita) but ranked third in importance in 1967 ($47 per capita). The rankings of the other three revenue sources changed relatively little between 1962 and 1967, although the mean amount of revenue per capita obtained from the various sources did increase rather substantially in most categories.

Expenditure for education was the largest component of expenditure in each of the seven categories in both 1962 and 1967. Expenditure for capital outlay was the second ranking component of expenditure in all categories except the developing suburb and small town in 1962 and was the second ranking component of expenditures in all categories except the small town in 1967. In both 1962 and 1967, the mean expenditure per capita for highways, for public welfare, for police protection, for utilities, and unallocable expenditures were among the largest components of expenditure. The mean per capita expenditure for several functions—among them sewerage, financial administration, general control, and public buildings—exhibited relatively little difference from one category to another. The mean expenditure for police protection tended to be highest in the three large city categories in both 1962 and 1967. The mean expenditure per capita for highways, on the other hand, was considerably greater in the suburb, small city, and small town categories than in the large city categories in 1962 and was considerably lower in the major and minor urban core city categories than in the other five categories in 1967. In general, the changes which occurred between 1962 and 1967 involved increases in the mean expenditure per capita for virtually all functions, but relatively little change occurred in the relative ranking of the per capita expenditure for each function.

Analyses of Variance

In the analyses based on revenue data, a difference statistically significant at beyond the .001 level was found between the major and minor urban core city categories in 1962. In 1967, the difference between these two categories was statistically significant at beyond the .01 level. A difference statistically significant at beyond the .01 level was found between the minor urban core city and independent city categories in both 1962 and 1967. A difference statistically significant at beyond the .01 level was found between the

independent city and established suburb categories in both 1962 and 1967. No statistically significant difference was found between the established suburb and developing suburb categories in either 1962 or 1967. A difference statistically significant at beyond the .01 level was found between the developing suburb and small city categories in 1962. In 1967, the difference between these two categories was found to be significant at beyond the .0001 level. The difference between the small city and small town categories was found to be statistically significant at beyond the .001 level in 1962 but was statistically significant only at beyond the .05 level in 1967.

In both 1962 and 1967, the variable which best discriminated between the major and minor urban core city categories was revenue from other local taxes. Revenue from the state was the variable which best discriminated between the minor urban core city and independent city categories in both 1962 and 1967. Revenue from other local sources best discriminated between the independent city and established suburb categories in 1962 and again in 1967. In 1962, revenue from property taxes and revenue from other local sources were both useful discriminators in the comparison of the established suburb and developing suburb categories. Revenue from other governmental sources proved to be the most useful discriminator when these two categories were compared in 1967. Revenue from property taxes best discriminated between the developing suburb and small city categories in 1962; revenue from the state was the variable which best discriminated between these two categories in 1967. Revenue from the state was the variable which best discriminated between the small city and small town categories in both 1962 and 1967.

With regard to expenditures, no significant difference was found between the major and minor urban core city categories in either 1962 or 1967. In both 1962 and 1967, differences statistically significant at beyond the .0001 level were found in the comparisons involving the minor urban core city and independent city, the independent city and established suburb, and the developing suburb and small city categories. In 1962, a difference statistically significant at beyond the .05 level was found when the established suburb and developing suburb categories were compared. In 1967, the difference found when these two categories were compared was significant at beyond the .0001 level, A difference statistically significant at beyond the .0001 level was found in the comparison of the small city and small town categories in 1962; in 1967 the difference between these two categories was significant at beyond the .001 level. It would appear that differences between the categories which were compared tended to increase between 1962 and 1967 with one exception, the difference between the small city and small town categories diminished very slightly.

CHAPTER VII

FISCAL CAPACITY OF STATES

In previous chapters we have considered data with regard to the revenues and expenditures of school districts, and the municipalities and counties most closely associated with each of the school districts. In this chapter attention will be directed toward another important component of fiscal capacity—the fiscal capacity of states.

The statistical treatment of the data utilized in this portion of the investigation differed markedly from that employed in other parts of the study. In the investigation of other governmental units, a random sample was drawn and sophisticated statistical tests were applied to the data to permit us to draw inferences with regard to the population from which the sample was drawn. The investigation of the fiscal capacity of states did not require the application of inferential statistical tests. The data gathered relative to the fiscal capacity of states were collected for the total population of states. All data were taken from sources that surveyed all available fiscal capacity bases, and computations were made with the complete information at hand. To the extent that the data sources used had garnered all the available data on a given fiscal capacity base, the differences, means and comparisons will be accurate. Thus, any differences which appear with regard to the fiscal capacity of states may be regarded as absolute, i.e., the same difference should appear if the analysis were repeated.

Because of the current work of the Advisory Commission on Intergovernmental Relations (ACIR), the treatment of fiscal capacity of states presented in this study represents only an overview of recent trends in various fiscal capacity bases. The Commission is in the process of publishing an updated and expanded study of its 1962 study of state and local fiscal capacity.[1] The new ACIR study will differ in several important ways from the earlier study. As stated by a member of the Commission's staff, the present effort is broader in that:

> First, we are going beyond taxes, to consider also the potential yield of non-tax revenue sources tapped by State and local governments, which provide about a fourth as much as these governments obtain from taxes. Secondly, we are developing measures separately for State and local governments, rather than only on a composite basis as in the earlier study. Also—and this is a major feature of the task—we are developing comparative capacity and effort measures not only for entire States but also for metropolitan areas and sizeable counties.[2]

In view of the scope and comprehensiveness of the Commission's current effort, a comprehensive analysis of the fiscal capacity of states as a part of this study was unwarranted.

Earlier in this report fiscal capacity was defined as a quantitative measure intended to reflect the resources which a taxing jurisdiction can tax to raise revenue for public purposes. Tax effort, a congenerous term, is a proximate measure of the extent to which a government uses its capacity to raise revenue through taxation. Only fiscal capacity will be treated here, as the intent of this

chapter is to present data concerning the relative capacity of states to provide revenue for public purposes.

The capacity of the populace and the institutions of a state to contribute to the support of government is influenced by many factors. A state's total resources—its income, sales, property, etc. —are proxies to its fiscal capacity, but the demands made upon these resources by governmental agencies outside the state (e.g., federal income taxes) also must be considered. Since absolute measures of state fiscal capacity are virtual enigmas in the real economic world, attention will be focused on estimating the relative fiscal capacities of states.

The Advisory Commission on Intergovernmental Relations related in a 1962 publication that there were at least two approaches to measuring fiscal capacity:[3] the first approach relies on economic indicators, notably measures of income out of which state and local taxes can be paid and compares them with the measures of income for other states; the second approach evaluates the tax bases available within a state, estimates the amount of revenue they would produce if subjected to various levels of taxation, and compares these results with calculations for other states.

A number of indices of state fiscal capacity were examined. A representative system was employed as a basis for comparisons among states for two major reasons: (1) Correlations between the available fiscal capacity measures have been shown in previous research to be quite low, i.e., they do not move in a one-to-one relationship, and (2) there are a variety of tax bases currently in use by the states or being considered for use. By examining a representative system of fiscal capacity bases, there was greater assurance of obtaining a complete picture of the fiscal capacity of each state. Data concerning the major tax bases of each state were extracted and compared (with the exception of corporate income) but were not subjected to hypothetical levels of taxation. The combination of tax bases included taxes on property, income, and consumption because they are the most common bases for the taxes levied by state or local governments.

Measures of Fiscal Capacity

No attempt will be made to discuss the relative merits of different taxes or tax bases, but data with regard to the various bases will be presented in units that allow comparison. In selecting the fiscal capacity units for analysis and in making comparisons, the project staff was somewhat limited by the availability of consistent and comparable data. Therefore, no information or data are included on corporate income. Although the corporate income tax represents a substantial revenue producer for the federal government, it is somewhat less productive for state and local governments. Nevertheless, it would have been included in the analysis had not the literature, which is replete with data on state corporate revenue, contained a paucity of information on state corporate income in any consistent or comparable form.

Which tax bases represent the major sources of revenue for state and local governments? The proportionate distribution of the major revenue producers for each level of government in 1968 follows:[4]

	LOCAL	STATE	FEDERAL	TOTAL
Income Taxes	3.6%	24.1%	82.8%	57.4%
Consumption Taxes	7.0	64.4	13.9	22.5
Property Taxes	86.6	2.5	–	15.8
Other Taxes	2.8	9.0	3.3	4.3
Total	100%	100%	100%	100%

Both corporate and individual income tax revenue are included in the income proportion presented. However, revenue from corporate income taxes constitutes less than one-third of the income tax revenue of states and virtually none of the income tax revenue of local governments. If state and local government tax revenue are combined, property tax revenue constitutes the major source and is followed by revenue from consumption taxes and revenue from income taxes.

Income

Economists generally agree that taxes are paid out of current income unless taxpayers are liquidating capital or fixed assets to meet tax liabilities. If the above reasoning is accepted, income clearly is a measure which must be included in any analysis of fiscal capacity. But the measurement of income in its various forms and the comparison of income among states is not without pitfalls. Income received in a state is not necessarily the same as income produced in a state, although certain economists have made the point that any variations among states in income produced tend to offset each other; i.e., states may specialize in producing certain commodities but the productive capacity of a state in industrial and business output is approximately the same as any other state. This argument has been refuted by other economists, who claim that it cannot be assumed that productivity and income received for products are not without some variation among states. Nevertheless, the operations of interstate corporations are complex, and the assignment of their product or income to particular states, except on a where-received basis, poses difficult measurement problems. Because of the unrestrained movement of goods and services across state boundaries, some states are able to "export" their taxes by taxing industries which are producing in one state but receiving income in other states. Much depends on the incidence of the tax, but if the persons who ultimately pay the tax reside in a state other than the state where the tax was levied, the tax has been exported. If all states derived their revenue primarily from taxes on production, then income produced certainly would be a better measure of capacity then income received. However, most states must rely heavily on nonexportable taxes.

Cautions with regard to the interpretation of the income data should signal the reader that conclusions reached as a result of the analysis of these data should be viewed with proper discretion. As data concerning the extent to which given states are able to export taxes or are able to produce more income than other states are not readily available, personal income measures will be the basis used for comparing the fiscal capacity of states in this investigation.

Another persuasive argument for using personal income as a measure of the fiscal capacity of a state is the current and ever increasing reliance on the state personal income tax as a source of revenue. As of January, 1970, thirty-seven states made use of some form of personal income tax, and four others (Tennessee, New Hampshire, New Jersey, Rhode Island) had a limited form of the individual income tax on stocks, bonds, investments, or income derived by workers living in other states. Prognosticators believe that most states will increase their reliance on the personal income tax and that more states will inaugurate the personal income tax to meet public demands and needs.

Personal income per capita, net effective buying income per capita, and net effective buying income per family were the measures of income used to compare the fiscal capacity of states. A discussion of each of these measures will follow later in this chapter.

Property

Any representative system of taxes or measure of fiscal capacity will include some measure of the value of property. The property tax has been a mainstay of local units of government for many years and was a major producer of revenue for state governments for over a hundred years. During the twentieth century, most states have relinquished their use of the property tax in favor of local governments until now it produces 87 percent of all municipal and school district revenue and only 2.5 percent of all state government revenue. As a source of revenue, it is anticipated that even with its inherent inequalities and difficulties in assessment, property as a tax base and as a measure of wealth will continue to maintain its current position as the major source of tax revenue for local governments.

Except for economically depressed areas, property valuations have shown a tendency to increase over the last thirty years. Property value tends to increase for a number of reasons:

(1) increase in the income earning capacity of property,
(2) Increased population resulting in new housing structures,
(3) increased amount of manufacturing and business property,
(4) increases due to inflation, and
(5) use of property for a more productive purpose.

Despite obsolescence, depreciation, population shifts, and economic decay in certain areas, most states either increased or maintained their property valuations between 1956 and 1966.

The property included in the data base for these analyses consisted of all tangible and real property not specifically exempted in each state. The base did not include property legally exempted from the general property tax system. Exempted property generally may be categorized as governmental holdings, church properties, and certain nonprofit institutions; particular classes of property specifically exempted on the basis of use (e.g., homesteads), or ownership (e.g., veterans, senior citizens), or both; and industrial plants temporarily exempted in certain states in an effort to attract new industry.

In Table 7.1 is shown the estimated distribution of locally assessed real property for 1956, 1961, and 1966. Gross assessed value by type of property increased consistently over the ten year period in each major category. Of the

TABLE 7.1

ESTIMATED DISTRIBUTION OF LOCALLY ASSESSED REAL PROPERTY, BY TYPE OF PROPERTY: 1956, 1961, and 1966

Type of Property	Gross assessed value (billions of dollars)			Percent		
	1956	1961	1966	1956	1961	1966
Total	209.8	280.5	393.2	100.0	100.0	100.0
Residential (nonfarm)	113.5	162.5	236.3	54.1	56.9	60.1
Single-family houses only	95.1	135.5	196.7	45.4	48.3	50.0
Acreage and farms	29.1	32.7	43.4	13.9	11.7	11.0
Vacant lots	4.8	7.0	10.2	2.3	2.5	2.6
Commercial and indus.	58.0[1]	74.5	97.2	27.7	26.6	24.7
Commerical	34.8	44.2	60.0	16.6	15.8	15.3
Industrial	22.6	30.3	37.1	10.8	10.8	9.4
Other and unallocable	4.4	3.8	6.0	2.1	1.4	1.5

[1]Total commercial and industrial includes, for California and Nevada, properties not allocable by type—principally separately assessed mineral rights.

NOTE: Because of rounding, detail may not add to totals.

SOURCE: U.S. Department of Commerce, Bureau of the Census. "Trends In Assessed Valuations and Sales Ratios, 1956-1966," State and Local Government Special Studies No. 54, March, 1970.

major categories of property, only residential property value (including single-family dwellings) increased in proportion among all categories of property. Other major categories of property, including commercial, industrial, and farm property, declined in proportion among all categories.

Consumption

While property has maintained or increased slightly as a revenue producer for state and local governments combined, and income has declined somewhat as a major revenue producer for total state and local government, the tax base that has met with increasing favor on the part of state legislators, as judged by new tax legislation, is consumption. Revenue from general and special consumption taxes as of 1968 constituted 64.4 percent of all state government revenue.

As of January, 1970, forty-five states utilized a general sales tax with levies ranging from 2 percent in four states to 6 percent in Pennsylvania. The base for the general sales tax varies considerably among states with regard to exemption and deduction practices. Although these practices will not be reflected in the fiscal capacity data and the comparisons made in this investigation, each state has its own exemption and deduction "modus operandi" with respect to food, clothing, services, amusements, drugs, and agricultural products.

In an investigation of state fiscal capacity, the consumption base is a logical entry for inclusion in the system. The measures used in this study as indices for comparing the fiscal capacity of states included retail sales per household and retail sales per capita.

Analysis of State Fiscal Capacity

In this section are presented the comparative data used in this study to illustrate the varying capacity of states to satisfy the needs and wants of their population. The discussion and conclusions, while not exhaustive, represent an attempt to survey the major representative fiscal capacity bases that states are likely to use as major revenue producers in the years ahead.

Per Capita Personal Income

Personal income estimates represent the most comprehensive economic index available on a state-by-state basis. The per capita personal income data were collected from the *Survey of Current Business* published by the Office of Business Economics, U.S. Department of Commerce. State personal income, as defined by the Office, is all current income received by the residents of a state from all sources including business and industrial establishments; federal, state and local governments; households; institutions; and foreign countries. All forms of income flowing to persons from these sources are included. Personal income is income accruing to those individuals who are located physically within a state without regard to their permanent or legal residence.

The capacity to pay taxes is affected by the distribution of income as well as by average level of income, and states with similar per capita incomes often will have very different income distributions. The personal income measures used in this investigation, however, will not reveal how income is distributed among families and individuals.

In Table 7.2 is reported the per capita personal income by state for alternate years between 1963 and 1969. In addition, the states are ranked for 1969, the percentage of increase or decrease between 1963 and 1969 is reported; and any change in rank for the state between 1963 and 1969 is shown.

TABLE 7.2

PER CAPITA PERSONAL INCOME BY STATE: 1963-1969

State	1963	1965	1967	1969	1969 Rank	% Increase or Decrease 1963-69	Change In Rank 1963-69
Ala.	1,669	$1,920	$2,165	$2,567	48	53.8	—
Alaska	2,785	3,226	3,798	4,512	3	62.0	+6
Ariz.	2,220	2,402	2,768	3,336	30	50.3	—
Ark.	1,625	1,836	2,140	2,520	50	55.1	-1
Cal.	2,993	3,267	3,687	4,272	8	42.7	-2
Colo.	2,479	2,715	3,057	3,568	22	43.9	-5
Conn.	3,113	3,448	4,004	4,537	2	40.0	+1
Del.	2,994	3,340	3,541	4,013	11	34.0	-6
D.C.	3,357	3,680	4,104	4,849	1	44.4	—
Fla.	2,141	2,442	2,896	3,427	29	60.1	+3
Ga.	1,878	2,173	2,574	3,040	37	61.9	+5

TABLE 7.2 (cont.)

State	1963	1965	1967	1969[1]	1969 Rank	% Increase or Decrease 1963-69	Change In Rank 1963-69
Hawaii	2,612	2,819	3,237	3,882	13	48.6	—
Idaho	2,045	2,402	2,529	2,857	43	39.7	-7
Ill.	2,911	3,298	3,737	4,310	6	48.1	+2
Ind.	2,467	2,855	3,189	3,691	17	49.6	+2
Iowa	2,299	2,735	3,051	3,517	25	53.0	+2
Kansas	2,398	2,683	3,040	3,531	24	47.2	-2
Ky.	1,840	2,060	2,420	2,850	44	54.9	-1
La.	1,839	2,079	2,435	2,780	46	51.2	-2
Maine	1,957	2,304	2,582	3,039	38	55.3	+2
Md.	2,678	3,024	3,435	4,095	10	52.9	+1
Mass.	2,774	3,079	3,567	4,138	9	49.2	+1
Mich.	2,581	3,042	3,365	3,944	12	52.8	+2
Minn.	2,365	2,675	3,083	3,608	21	52.6	+3
Miss.	1,434	1,611	1,895	2,192	51	52.9	—
Mo.	2,360	2,663	3,022	3,459	27	46.6	-2
Mont.	2,263	2,448	2,768	3,124	34	38.0	-5
Neb.	2,273	2,640	3,068	3,642	20	60.2	+8
Nev.	3,235	3,305	3,634	4,359	5	34.7	-3
N. Hampshire	2,343	2,581	3,024	3,474	26	48.3	—
N.J.	2,960	3,256	3,683	4,278	7	44.5	—
N. Mexico	2,048	2,236	2,464	2,894	41	41.3	-6
N.Y.	3,009	3,349	3,804	4,421	4	46.9	—
N.C.	1,801	2,049	2,447	2,890	42	60.5	+3
N.D.	1,999	2,311	2,543	3,011	39	50.6	-1
Ohio	2,508	2,857	3,232	3,779	14	50.7	+2
Okl.	1,990	2,299	2,660	3,065	35	54.0	+4
Oregon	2,471	2,773	3,098	3,565	23	44.3	-5
Penn.	2,437	2,747	3,184	3,664	18	50.3	+2
R.I.	2,510	2,813	3,332	3,779	14	50.6	+1
S.C.	1,576	1,844	2,192	2,580	49	63.7	+1
S.D.	1,908	2,210	2,587	3,051	36	59.9	+5
Tenn.	1,772	2,042	2,370	2,810	45	58.6	+2
Texas	2,102	2,358	2,767	3,254	33	54.8	—
Utah	2,210	2,374	2,616	2,994	40	35.5	-9
Vt.	2,013	2,377	2,809	3,267	31	62.3	+6
Va.	2,093	2,417	2,813	3,294	32	57.4	+2
Wash.	2,618	2,906	3,407	3,835	16	46.5	-4
W. Va.	1,778	2,025	2,316	2,610	47	46.8	-1
Wis.	2,375	2,728	3,115	3,647	19	53.6	+4
Wyo.	2,412	2,570	2,889	3,447	28	42.9	-7
U.S.	2,455	2,765	3,162	3,680	—	49.9	—

SOURCE: SURVEY OF CURRENT BUSINESS. "State Personal Income in 1969", SURVEY OF CURRENT BUSINESS 50:14-17; April 1970.

[1]Preliminary figures.

The average per capita income in the United States increased from $2,455 to $3,680 between 1963 and 1969, an increase of 49.9 percent. The percentage increase ranged from a low of 34 percent in Delaware to a high of 63.7 percent in South Carolina. South Carolina ranked 50 in 1963 and moved up only one rank by 1969. Those states which moved up the most in rank relative to other states included Nebraska (+8), Vermont and Alaska (+6), and Georgia and South Dakota, (+5). Those states that lost rank relative to other states included Utah, (-9), Wyoming and Idaho (-7), New Mexico (-6), and Colorado, Montana, and Oregon (-5).

The highest ranked states (including the District of Columbia) in per capita personal income in 1969 were, in descending order, District of Columbia ($4,849), Connecticut ($4,537), Alaska ($4,512), New York ($4,421), and Nevada ($4,359). The lowest ranked states in 1969 were, in ascending order, Mississippi ($2,192), Arkansas ($2,520), Alabama ($2,567), South Carolina ($2,580), and West Virginia ($2,610). Although no particular geographic region was represented in the highest ranked states, all of the lowest ranked states are located in the southeastern portion of the United States. The relative position of the states tended to remain about the same between 1963 and 1969. A state that was ranked low, medium or high relative to other states in 1963 tended to hold the same approximate rank in 1969.

Per Household Effective Buying Income (EBI)

Effective buying income is comparable to what the federal government terms "disposable personal income." Effective buying income is an index based on the income that individuals and households have available to spend after subtracting all direct taxes—federal, state, and local. The data were collected from *Sales Management's* "Survey of Buying Power" published in June of each year. The estimates consist of the income that individuals receive in the form of wages, salaries, and commissions; proprietors' income; rental income from real property; dividends and interest from securities and savings; and social security benefits, pensions, and welfare payments. To this total are added, where important, imputed rentals of owner-occupied homes and imputed value of fuel and food raised and consumed on farms. From this total is subtracted all direct taxes.

Households are not the same as families. Households, for the purpose of this investigation, are defined as including all the persons occupying a housing unit—as distinguished from a family which consists of two or more persons related to each other by blood, marriage, or adoption. A housing unit is a house, apartment or other group of rooms, or a single room when it is occupied or intended for occupancy as separate living quarters.

The basic unit for comparing the fiscal capacity of states in this section is per household effective buying income. Essentially, per household EBI is an index of the income that households have available to spend after each governmental level has taken its share of direct taxes. State legislators would be well advised to examine this index closely when considering new taxes or new tax rate structures.

In Table 7.3 is reported the per household effective buying income by states

TABLE 7.3

PER HOUSEHOLD EFFECTIVE BUYING INCOME BY STATE:
1963-1969

State	1963	1965	1967	1969	1969 Rank	% Increase or Decrease 1963-69	Change In Rank 1963-69
Ala.	5,304	6,107	7,011	7,606	49	43.4	—
Alaska	9,322	10,968	11,957	13,981	1	50.0	+1
Ariz.	6,722	7,380	8,020	9,737	20	44.9	+8
Ark.	4,886	5,568	6,405	7,253	50	48.4	—
Cal.	8,041	8,792	9,607	10,698	11	33.0	+1
Colo.	6,817	7,670	8,532	9,657	25	41.7	-2
Conn.	9,015	9,989	11,017	12,074	3	33.9	+1
Del.	9,442	10,521	10,469	9,737	20	3.1	-20
D.C.	8,917	9,737	10,729	11,625	4	30.4	+1
Fla.	5,745	6,611	7,465	8,666	40	50.8	+3
Ga.	6,001	6,886	8,105	9,117	33	51.9	+8
Hawaii	8,685	9,546	11,215	12,239	2	40.9	+4
Idaho	6,059	6,509	7,608	8,152	47	34.5	-7
Ill.	8,152	9,140	10,415	11,593	5	42.2	+5
Ind.	7,073	8,016	9,401	10,128	17	43.2	-1
Iowa	6,425	7,355	9,022	9,617	26	49.7	+5
Kansas	6,226	6,969	8,438	9,417	27	51.3	+10
Ky.	5,671	6,214	7,529	8,480	43	49.5	+2
La.	5,583	6,475	7,811	8,557	41	53.3	+5
Maine	6,179	6,996	7,855	8,743	38	41.5	—
Md.	8,353	9,384	10,369	11,343	7	35.8	+1
Mass.	8,048	9,105	9,814	11,142	8	38.4	+3
Mich.	7,696	9,068	10,338	11,126	10	44.6	+3
Minn.	6,767	7,511	9,098	10,189	15	50.6	+12
Miss.	4,839	5,536	6,579	7,126	51	47.3	—
Mo.	6,815	7,639	8,307	9,118	32	33.8	-8
Mont.	6,673	7,048	7,867	8,500	42	27.4	-13
Neb.	6,773	7,365	8,569	9,277	30	37.0	-4
Nev.	9,276	9,646	9,021	10,230	14	10.3	-11
N. Hampshire	6,803	7,524	8,840	9,686	24	42.4	+1
N.J.	8,390	9,355	10,334	11,525	6	37.4	+1
N. Mexico	6,306	7,063	7,718	8,691	39	37.8	-4
N.Y.	8,279	9,117	9,941	11,130	9	34.4	—
N.C.	6,605	6,848	7,945	8,907	36	46.9	+3
N.D.	7,137	7,671	8,218	8,889	37	24.5	-22
Ohio	7,265	8,195	9,203	10,462	12	44.0	+2
Okl.	5,677	6,292	7,230	8,205	45	44.5	-1
Oregon	6,417	7,436	8,113	9,042	34	40.9	-2
Penn.	7,050	8,024	8,980	10,053	18	42.6	-1
R.I.	6,938	7,832	9,063	10,140	16	46.2	+5
S.C.	5,528	6,354	7,501	8,367	44	51.4	+4
S.D.	6,398	6,495	7,716	8,971	35	40.2	-2
Tenn.	5,531	6,283	7,325	8,167	46	47.7	+1
Texas	6,272	7,008	7,975	9,216	31	46.9	+5
Utah	6,948	7,435	8,353	9,323	28	34.2	-8
Vt.	6,320	7,427	8,744	9,729	22	53.9	+12

TABLE 7.3 (cont.)

State	1963	1965	1967	1969	1969 Rank	% Increase or Decrease 1963-69	Change In Rank 1963-69
Va.	6,631	7,658	8,676	9,706	23	46.4	+7
Wash.	6,978	7,643	9,276	10,285	13	47.4	+6
W. Va.	5,911	6,663	7,406	7,896	48	33.6	-6
Wis.	7,026	7,588	9,016	10,104	19	42.5	-1
Wyo.	6,899	7,350	7,647	9,321	29	35.1	-7
U.S.	7,130	7,989	9,012	10,048	—	40.9	—

SOURCE: SALES MANAGEMENT. "Survey of Buying Power," SALES MANAGEMENT, June, 1964-1966-1968-1970.

for alternate years, 1963 through 1969. The 1969 rank of each state, the percentage change in per household EBI for each state, and the change in rank relative to other states between 1963 and 1969 is shown.

In 1969 the highest ranked states were, in descending order, Alaska ($13,981), Hawaii ($12,239), Connecticut ($12,074), District of Columbia ($11,625), and Illinois ($11,593). The lowest ranked states were, in ascending order, Mississippi ($7,126), Arkansas ($7,253), Alabama ($7,606), West Virginia ($7,896), and Idaho ($8,152). It may be noted that four of the five lowest ranked states are located in the southeastern portion of the United States. No particular geographic region was represented by the five top ranked states.

Average per household EBI for the United States increased from $7,130 in 1963 to $10,048 in 1969, a 40.9 percent increase. Delaware's per household EBI increased the least (3.1 percent) and Vermont's increased the most (53.9 percent). Those states which gained in rank between 1963 and 1969 relative to other states included Minnesota and Vermont (+12), Kansas (+10), Georgia and Arizona (+8), Virginia (+7), and Washington (+6). Those states that decreased in their relative position were North Dakota (-22), Delaware (-20), Montana (-13), Nevada (-11), and Utah (-8).

Per Capita Effective Buying Income (EBI)

Per capita effective buying income is a measure of fiscal capacity related to population. Through its use a state may obtain some indication of the ability of its populace to support new taxes or tax rate increases. Per capita effective buying income is an index of the income that each resident of a state has remaining after the direct taxes levied by federal, state, and local governments have been subtracted from his total income.

The use of per capita EBI may seem to convey the implication that a state's public expenditure needs vary directly with the size of its population. Caution is expressed to those who would interpret the data in this manner. Before true differences in fiscal capacity could be identified, it would be necessary to examine such factors as the distribution of income among the state's residents;

the age distribution of the population of the state, i.e., the number of youth to be educated; and the distribution of population between urban and rural areas. These distributions and others would give additional insight as to the capacity of a state to support public services in light of its needs. Although the intent of this investigation was to examine the fiscal capacity of states without regard to either effort or needs, the reader is advised to exercise discretion in interpreting the data.

In Table 7.4 is shown the per capita EBI by state for alternate years 1963 through 1969. The rank of each state in 1969, the percentage increase or decrease between 1963 and 1969, and the change in rank between 1963 and 1969 also are included in the table.

Per capita EBI in 1969 averaged $3,078 for the United States and ranged from $1,931 in Mississippi to $4,002 in the District of Columbia, a multiple of more than two. This difference further accentuates the need to examine indices of fiscal capacity when new taxes or increases in existing taxes are being considered, or when deliberations regarding the redistribution of governmental funds for equity purposes are being undertaken.

TABLE 7.4

PER CAPITA EFFECTIVE BUYING INCOME BY STATE:
1963-1969

State	1963	1965	1967	1969	1969 Rank	% Increase or Decrease 1963-69	Change In Rank 1963-69
Ala.	$1,435	$.1664	$1,932	$2,150	50	49.8	-1
Alaska	2,361	2,805	3,081	3,650	3	54.6	+7
Ariz.	1,894	2,076	2,280	2,839	31	49.9	—
Ark.	1,437	1,648	1,909	2,218	48	54.3	—
Cal.	2,535	2,787	3,083	3,514	7	38.6	-1
Colo.	2,075	2,339	2,593	3,003	22	44.7	-2
Conn.	2,660	2,953	3,292	3,694	2	38.9	+2
Del.	2,706	3,018	3,038	2,895	28	7.0	-25
D.C.	2,943	3,226	3,603	4,002	1	36.0	+1
Fla.	1,800	2,081	2,378	2,853	29	58.5	+6
Ga.	1,634	1,883	2,241	2,585	38	58.2	+5
Hawaii	2,087	2,298	2,734	3,064	17	46.8	—
Idaho	1,756	1,916	2,249	2,463	41	40.3	-1
Ill.	2,481	2,788	3,208	3,640	4	46.7	+4
Ind.	2,103	2,390	2,831	3,123	15	48.5	+1
Iowa	1,960	2,250	2,779	3,029	19	54.5	+8
Kansas	1,921	2,165	2,653	3,006	20	56.5	+10
Ky.	1,590	1,753	2,141	2,457	42	54.5	+3
La.	1,528	1,778	2,169	2,435	44	59.4	+3
Maine	1,785	2,029	2,303	2,625	37	47.1	+1
Md.	2,314	2,605	2,907	3,254	12	40.6	-1
Mass.	2,389	2,711	2,955	3,434	8	43.7	+1
Mich.	2,195	2,594	2,982	3,279	11	49.4	+1
Minn.	1,957	2,176	2,655	3,035	18	55.1	+10
Miss.	1,265	1,453	1,739	1,931	51	52.6	—

TABLE 7.4 (cont.)

State	1963	1965	1967	1969	1969 Rank	% Increase or Decrease 1963-69	Change In Rank 1963-69
Mo.	2,135	2,407	2,636	2,947	25	38.0	-11
Mont.	1,997	2,123	2,385	2,647	36	32.5	-10
Neb.	2,076	2,261	2,651	2,945	26	41.9	-7
Nev.	2,983	3,088	2,917	3,398	9	13.9	-8
N. Hampshire	2,017	2,240	2,655	2,982	24	47.8	+1
N.J.	2,488	2,775	3,098	3,542	6	42.4	+1
N. Mexico	1,673	1,882	2,084	2,409	45	44.0	-4
N.Y.	2,570	2,841	3,127	3,579	5	39.3	—
N.C.	1,602	1,822	2,136	2,454	43	53.2	+1
N.D.	1,949	2,105	2,279	2,529	40	29.8	-11
Ohio	2,128	2,408	2,736	3,187	14	49.8	+1
Okl.	1,785	1,991	2,308	2,680	34	50.1	+4
Oregon	2,035	2,369	2,620	2,985	23	46.7	—
Penn.	2,082	2,377	2,692	3,086	16	48.2	+2
R.I.	2,068	2,380	2,786	3,190	13	54.3	+9
S.C.	1,399	1,615	1,926	2,209	49	57.9	+1
S.D.	1,833	1,863	2,225	2,649	35	44.5	-2
Tenn.	1,561	1,783	2,091	2,396	46	53.5	—
Texas	1,815	2,037	2,344	2,777	32	53.0	+2
Utah	1,869	2,006	2,278	2,581	39	38.1	-7
Vt.	1,795	2,114	2,507	2,852	30	58.9	+6
Va.	1,795	2,077	2,384	2,728	33	52.0	+3
Wash.	2,178	2,394	2,938	3,320	10	52.4	+3
W. Va.	1,662	1,881	2,109	2,294	47	38.0	-5
Wis.	2,035	2,207	2,649	3,005	21	47.7	+2
Wyo.	2,070	2,217	2,325	2,896	27	39.9	-6
U.S.	2,103	2,367	2,697	3,078	—	46.4	—

SOURCE: SALES MANAGEMENT, "Survey of Buying Power," SALES MANAGEMENT, June, 1964-1966-1968-1970.

The highest ranked states in per capita EBI in 1969 were, in descending order, District of Columbia ($4,002), Connecticut ($3,694), Alaska ($3,650), Illinois ($3,640), and New York ($3,579). The lowest ranked states were, in ascending order, Mississippi ($1,931), Alabama ($2,150), South Carolina ($2,209), Arkansas ($2,218), and West Virginia ($2,294). Again, the lowest ranked states were located predominately in the southeastern part of the United States.

Increases in per capita EBI between 1963 and 1969 ranged from 7 percent in Delaware to 59.4 percent in Louisiana. Those states which gained most in rank relative to other states between 1963 and 1969 were Kansas and Minnesota (+10), Rhode Island (+9), Iowa (+8), Alaska (+7), and Vermont and Florida (+6). Those states which lost position between 1963 and 1969 relative to other states included Delaware (-25), North Dakota and Missouri (-11), Montana (-10), Nevada (-8), Nebraska and Utah (-7), and Wyoming (-6).

Per Capita Retail Sales

Retail sales for purposes of this investigation consisted of sales at the retail

level as defined by *Sales Management* in the annual "Survey of Buying Power." Retail sales are defined as all net sales (minus refunds and allowances for returns) of establishments primarily engaged in retail trade. Sales taxes collected are included. Retail sales by such nonretailers as wholesalers and service establishments are excluded from the estimates. The population figure used for each state is an estimate of resident population for a specific year and is based on Bureau of the Census reports.

In Table 7.5 is reported the per capita retail sales for each state for alternate years from 1963 through 1969. Also reported are each state's rank in 1969 on per capita retail sales, the percentage increase or decrease in per capita retail sales between 1963 and 1969, and any change in rank relative to other states between 1963 and 1969.

Per capita retail sales ranged from a low of $1,174 in Mississippi to a high of $2,178 in the District of Columbia. The state with the largest percentage increase between 1963 and 1969 was California (89.7 percent); the state with the smallest percentage increase (excluding District of Columbia) was Hawaii (4.9 percent).

TABLE 7.5

PER CAPITA RETAIL SALES BY STATE: 1963-1969

State	1963	1965	1967	1969	1969 Rank	% Increase or Decrease 1963-69	Change In Rank 1963-69
Ala.	952	1,105	1,152	1,270	49	33.4	—
Alaska	985	1,276	1,319	1,640	34	66.5	+13
Ariz.	1,321	1,374	1,487	1,729	24	30.9	—
Ark.	1,065	1,177	1,238	1,461	44	37.2	-3
Cal.	1,002	1,194	1,757	1,901	7	89.7	+39
Colo.	1,383	1,562	1,727	1,772	18	28.1	-4
Conn.	1,347	1,559	1,716	1,839	12	36.5	+8
Del.	1,510	1,638	1,741	1,804	15	19.5	-12
D.C.	2,130	2,007	2,285	2,178	1	2.3	—
Fla.	1,352	1,589	1,754	1,931	4	42.8	+15
Ga.	1,090	1,266	1,371	1,543	39	41.6	+1
Hawaii	1,504	1,648	1,324	1,577	38	4.9	-34
Idaho	1,380	1,518	1,636	1,721	25	24.7	-9
Ill.	1,465	1,681	1,822	1,902	6	29.8	-1
Ind.	1,309	1,510	1,646	1,807	14	38.0	+12
Iowa	1,428	1,497	1,673	1,931	4	35.2	+2
Kansas	1,264	1,398	1,546	1,623	35	28.4	-5
Ky.	1,007	1,142	1,259	1,396	47	38.6	-3
La.	1,003	1,115	1,226	1,416	46	40.2	-1
Maine	1,206	1,395	1,545	1,618	37	34.2	-1
Md.	1,261	1,448	1,583	1,756	22	39.3	+10
Mass.	1,403	1,536	1,669	1,843	11	31.4	-2
Mich.	1,341	1,578	1,665	1,791	16	33.6	+5
Minn.	1,316	1,426	1,675	1,774	17	34.8	+7
Miss.	859	981	1,048	1,174	51	36.7	-1

TABLE 7.5 (cont.)

State	1963	1965	1967	1969	1969 Rank	% Increase or Decrease 1963-69	Change In Rank 1963-69
Mo.	1,392	1,528	1,699	1,758	20	26.3	-9
Mont.	1,406	1,468	1,572	1,708	27	21.5	-19
Neb.	1,373	1,569	1,702	1,879	8	36.9	+10
Nev.	1,654	1,784	1,746	2,144	2	29.6	--
N. Hampshire	1,389	1,519	1,667	1,863	9	34.1	+4
N.J.	1,402	1,568	1,611	1,758	20	25.4	-10
N. Mexico	1,174	1,231	1,314	1,435	45	22.2	-7
N.Y.	1,423	1,498	1,609	1,755	23	23.3	-16
N.C.	1,035	1,206	1,279	1,463	43	41.4	—
N.D.	1,337	1,423	1,485	1,715	26	28.3	-4
Ohio	1,270	1,407	1,526	1,690	29	33.1	—
Okl.	1,184	1,302	1,406	1,621	36	36.9	+1
Oregon	1,379	1,609	1,702	1,831	13	32.8	+4
Penn.	1,232	1,361	1,461	1,652	30	34.1	+3
R.I.	1,216	1,456	1,576	1,643	33	35.1	+2
S.C.	854	1,036	1,114	1,306	48	52.9	+3
S.D.	1,289	1,322	1,446	1,649	31	27.9	-3
Tenn.	1,061	1,260	1,383	1,491	40	40.5	+2
Texas	1,262	1,373	1,492	1,649	31	30.7	—
Utah	1,226	1,382	1,483	1,473	42	20.1	-8
Vt.	1,313	1,533	1,720	1,935	3	47.4	+22
Va.	1,094	1,245	1,359	1,482	41	35.5	-2
Wash.	1,381	1,449	1,684	1,844	10	33.5	+5
W. Va.	968	1,136	1,279	1,260	50	30.2	-2
Wis.	1,300	1,375	1,560	1,697	28	30.5	-1
Wyo.	1,390	1,570	1,800	1,765	19	27.0	-7
U.S.	1,297	1,443	1,564	1,709	—	31.8	—

SOURCE: SALES MANAGEMENT. "Survey of Buying Power," SALES MANAGEMENT, June, 1964-1966-1968-1970.

The highest ranked states in per capita retail sales in 1969 were, in descending order, District of Columbia ($2,178), Nevada ($2,144), Vermont ($1,935), Iowa and Florida ($1,931), and Illinois ($1,902). The lowest ranked states were, in ascending order, Mississippi ($1,174), West Virginia ($1,260), Alabama ($1,270), South Caroline ($1,306), and Kentucky ($1,396).

Those states which gained the most in rank relative to other states in per capita retail sales between 1963 and 1969 were California (+39), Vermont (+22), Florida (+15), Alaska (+13), Indiana (+12), and Nebraska and Maryland (+10). Those states which lost rank relative to other states were Hawaii (-34), Montana (-19), New York (-16), Delaware (-12), and New Jersey (-10).

Per Household Retail Sales

Retail sales as defined in the previous section also were examined on a per household retail sales basis. It will be recalled that the household unit is not the same as the family unit. Households are units containing all the persons

occupying the housing unit as distinguished from a family which consists of two or more persons related to each other by blood, marriage or adoption. A housing unit is a house, apartment of other group of rooms, or a single room when it is occupied or intended for occupancy as separate living quarters.

Data concerning per household retail sales were obtained for each state by dividing the total sales of all stores classified as retail by the total number of households in a state. This unit of measurement adds another dimension to the comparison of states with regard to fiscal capacity. This index should provide a fairly reliable estimate of what each household unit spends at the retail level.

In Table 7.6 is reported the per household retail sales by states for alternate years between 1963 and 1969. Each state's rank in 1969, the percentage increase or decrease between 1963 and 1969, and any changes in rank relative to other states also are shown.

The mean per household retail sales in 1969 for the United States was $5,581. The range was from a low of $4,331 in Mississippi to a high of $6,601 in Vermont. The state whose mean per household retail sales increased the most

TABLE 7.6

PER HOUSEHOLD RETAIL SALES BY STATE: 1963-1969

State	1963	1965	1967	1969	1969 Rank	% Increase or Decrease 1963-1969	Change In Rank 1963-69
Ala.	$3,520	$4,057	$4,180	$4,493	49	27.6	-1
Alaska	3,889	4,989	5,119	6,282	5	61.5	+37
Ariz.	4,689	4,885	5,230	5,931	16	26.5	-4
Ark.	3,622	3,977	4,154	4,778	48	31.9	-2
Cal.	4,170	5,197	5,475	5,788	20	38.8	+16
Colo.	4,545	5,124	5,683	5,699	23	25.4	-1
Conn.	4,566	5,275	5,743	6,011	13	31.6	+5
Del.	5,268	5,712	6,000	6,068	9	15.2	-7
D.C.	6,453	6,057	6,806	6,328	3	-1.9	-2
Fla.	4,315	5,049	5,507	5,866	18	35.9	+15
Ga.	4,003	4,631	4,959	5,440	33	35.9	+7
Hawaii	4,771	5,214	5,430	6,301	4	32.1	+2
Idaho	4,759	5,155	5,535	5,698	24	19.7	-17
Ill.	4,813	5,510	5,917	6,059	10	25.9	-5
Ind.	4,402	5,065	5,464	5,859	19	33.1	+10
Iowa	4,680	4,892	5,431	6,131	6	31.0	+8
Kansas	4,097	4,502	4,918	5,082	43	24.0	-6
Ky.	3,593	4,051	4,427	4,819	47	34.1	—
La.	3,663	4,060	4,415	4,977	44	35.9	+1
Maine	4,174	4,812	5,270	5,389	35	29.1	-1
Md.	4,551	5,216	5,647	6,121	7	34.5	+14
Mass.	4,727	5,157	5,543	5,981	14	26.5	-5
Mich.	4,700	5,515	5,774	6,075	8	29.3	+2
Minn.	4,552	4,922	5,740	5,958	15	30.9	+5
Miss.	3,287	3,739	3,963	4,331	51	31.8	—

TABLE 7.6 (cont.)

State	1963	1965	1967	1969	1969 Rank	% Increase or Decrease 1963-69	Change In Rank 1963-69
Mo.	4,442	4,851	5,353	5,439	34	22.4	-8
Mont.	4,699	4,872	5,185	5,485	30	16.7	-19
Neb.	4,478	5,109	5,502	5,919	17	32.2	+8
Nev.	5,144	5,572	5,399	6,457	2	25.5	+1
N. Hampshire	4,682	5,104	5,550	6,053	11	29.3	+2
N.J.	4,728	5,287	5,373	5,720	21	21.0	-13
N. Mexico	4,426	4,618	4,865	5,175	41	16.9	-13
N.Y.	4,584	4,809	5,115	5,458	32	19.1	-15
N.C.	3,920	4,532	4,757	5,310	38	35.5	+3
N.D.	4,896	5,187	5,356	6,029	12	23.1	-8
Ohio	4,336	4,788	5,135	5,548	28	27.9	+4
Okl.	3,763	4,116	4,404	4,963	45	31.9	-2
Oregon	4,350	5,049	5,271	5,547	29	27.5	+2
Penn.	4,173	4,594	4,875	5,382	36	29.0	-1
R.I.	4,079	4,791	5,127	5,223	40	28.0	-2
S.C.	3,376	4,078	4,340	4,944	46	46.4	+4
S.D.	4,498	4,608	5,014	5,584	27	24.1	-4
Tenn.	3,760	4,440	4,847	5,083	42	35.2	+2
Texas	4,363	4,725	5,076	5,473	31	25.4	-1
Utah	4,557	5,120	5,438	5,321	37	16.8	-18
Vt.	4,623	5,385	5,999	6,601	1	42.8	+15
Va.	4,043	4,592	4,944	5,272	39	30.4	—
Wash.	4,427	4,624	5,318	5,713	22	29.0	+5
W. Va.	3,446	4,023	4,492	4,337	50	25.9	-1
Wis.	4,490	4,730	5,310	5,654	26	25.9	-2
Wyo.	4,633	5,205	5,920	5,682	25	22.6	-10
U.S.	4,397	4,873	5,226	5,581	—	26.9	—

SOURCE: SALES MANAGEMENT. *"Survey of Buying Power,"* SALES MANAGEMENT, June, 1964-1966-1968-1970.

between 1963 and 1969 was Alaska (61.5 percent). The District of Columbia's per household retail sales decreased by 1.9 percent in the same period.

The highest ranked states in 1969 were, in descending order, Vermont ($6,601), Nevada ($6,457), District of Columbia ($6,328), Hawaii ($6,301), and Alaska ($6,282). It may be noted that many of the top ranked states are states that attract tourists. The lowest ranked states in 1969 were, in ascending order, Mississippi ($4,331), West Virginia ($4,337), Alabama ($4,493), Arkansas ($4,778), and Kentucky ($4,819). The lowest ranked states tend to be located in the southeastern part of the United States.

Those states which gained the most in rank relative to other states between 1963 and 1969 were Alaska (+37), California (+16), Vermont and Florida (+15), and Indiana (+10). Those states which lost the most between 1963 and 1969 were Montana (-19), Utah (-18), Idaho (-17), New York (-15), and New Jersey and New Mexico (-13).

Per Capita Property Value

Property value indices with regard to the fiscal capacity of states have been a

very difficult and lubricious quantity to measure. The problems of measuring real value of property were explicated to a certain degree earlier in this chapter. Essentially, the basic difficulty in calculating indices of the real value of property is that of establishing the assessment base of a state and determining the average assessment ratio. The assessment base data come from state sources and depend upon the statutory definition of the property tax base used in a particular state in a given year. Use of the average assessment ratio for the state also has limitations. As an average, it does not reveal the range of assessment ratios used within a state nor is there any assurance that the average is calculated from a normal distribution of local assessment ratios.

Regardless of the somewhat aberrant data bases available, it was decided to proceed rather than abandoning the attempt to compare the fiscal capacity of states on property value indices. The gross assessed value of a state is useless as a comparative measure since the assessment ratios vary from state to state.

To place the data in useable form, the gross assessed value of property in a state was divided by the average assessment ratio of the state for the year reported. In Table 7.7 is shown the total real value of property computed for

TABLE 7.7

TOTAL REAL VALUE OF PROPERTY AND STATEWIDE AVERAGE ASSESSMENT RATIO FOR ALL TYPES OF PROPERTY: 1956, 1961, 1966

	1956		1961		1966	
State	Value of Property (000,000)	Assessment Ratio	Value of Property (000,000)	Assessment Ratio	Value of Property (000,000)	Assessment Ratio
Ala.	11,832	19.1	15,897	19.4	20,640	19.7
Alaska	NA	NA	NA	NA	1,605	81.0
Ariz.	8,417	15.8	13,049	14.2	14,739	16.1
Ark.	9,340	10.0	10,567	13.4	14,787	12.2
Cal.	120,670	18.8	184,881	17.6	228,508	18.9
Colo.	11,859	26.4	15,037	24.6	16,727	25.3
Conn.	15,599	43.9	18,900	53.2	27,682	51.2
Del.	1,909	48.6	2,283	54.1	3,591	48.4
Fla.	23,214	29.8	37,710	40.3	45,340	68.9
Ga.	13,896	22.3	19,817	21.3	20,946	34.9
Hawaii	NA	NA	4,656	46.2	5,949	57.3
Idaho	5,428	11.2	6,574	10.8	8,264	11.0
Ill.	68,443	41.8	79,584	43.8	96,718	41.2
Ind.	34,032	21.9	38,354	22.3	41,559	24.5
Iowa	20,332	23.2	23,021	23.4	26,336	24.1
Kansas	20,429	21.0	24,239	18.8	26,346	18.8
Ky.	12,348	29.3	15,554	27.0	19,429	84.0
L\.	14,984	19.6	20,450	18.9	27,538	17.1
Maine	3,301	35.1	4,305	44.3	6,079	50.8
Md.	13,252	50.7	20,609	44.7	29,759	43.6
Mass.	20,070	42.8	27,572	37.6	32,352	46.3
Mich.	48,926	29.7	52,034	32.3	73,171	28.0
Minn.	17,171	11.7	23.309	9.7	22,473	11.2
ss.	7,579	17.1	11,264	14.0	14,867	13.5

TABLE 7.7 (cont.)

State	Value of Property (000,000)	Assess-ment Ratio	Value of Property (000,000)	Assess-ment Ratio	Value of Property (000,000)	Assess-ment Ratio
Mo.	24,862	27.5	30,950	25.8	37,591	25.4
Mont.	7,282	8.5	9,337	7.4	7,043	11.7
Neb.	10,228	28.9	12,656	25.9	15,204	28.5
Nev.	2,672	23.2	3,772	23.2	6,447	25.3
N. Hampshire	2,527	40.4	3,272	41.2	4,519	53.8
N.J.	29,265	26.0	38,249	27.7	45,856	62.0
N. Mexico	5,710	18.3	8,159	15.7	8,302	19.2
N.Y.	68,597	52.8	101,616	44.0	152,801	35.1
N.C.	19,077	35.1	30,288	30.2	31,751	42.9
N.D.	4,324	14.8	4,115	16.5	5,974	11.6
Ohio	61,308	36.0	86,593	33.9	96,136	35.3
Okl.	12,325	19.7	15,513	19.3	20,270	17.8
Oregon	10,937	18.9	12,933	23.9	17,495	20.2
Penn.	37,000	32.3	47,238	32.4	55,210	31.4
R.I.	3,520	64.2	4,168	65.5	5,936	54.8
S.C.	10,769	6.5	14,714	5.6	20,740	5.0
S.D.	4,801	40.2	5,120	41.6	6,416	37.3
Tenn.	10,472	28.4	13,673	28.4	18,863	26.2
Texas	64,348	16.4	76,097	17.5	85,686	19.1
Utah	7,925	14.7	9,532	14.1	10,006	15.4
Vt.	1,469	29.2	1,656	25.9	2,019	31.7
Va.	18,336	27.4	24,090	28.9	32,890	29.9
Wash.	17,121	15.7	24,848	14.5	32,013	15.3
W. Va.	11,529	29.5	12,229	32.8	12,934	38.0
Wis.	18,746	45.6	23,403	48.1	28,588	52.9
Wyo.	4,150	19.3	5,233	19.3	6,184	19.0
U.S.	934,187	30.0	1,240,495	29.5	1,521,226	32.8

SOURCE: U.S. Department of Commerce, Bureau of the Census, "Trends in Assessed Valuation and Sales Ratios, 1956-1966," STATE AND LOCAL GOVERNMENT SPECIAL STUDIES No. 54, March, 1970.

each state and the statewide average assessment ratio for each state for the years 1956, 1961, and 1966. The real value of property shown for each state in Table 7.7 is an estimate of the total sale (real, equalized, etc.) value of the property in a given state in a given year (1956, 1961, 1966). The total sale value of the property was then divided by the population of the state to obtain the per capita real value of property—the unit employed as a basis for comparing the relative fiscal capacity of the several states.

In Table 7.8 is reported the per capita real value of property by state for the years 1956, 1961, and 1966. The average per capita real value of property in the United States in 1966 was $7,767—which was $2,259 above the 1956 average, a 41 percent increase over the 1956 base. The state which had the greatest percentage increase between 1956 and 1966 was New York (99.5 percent). The state which had the greatest percentage decrease in per capita property value between 1956 and 1966 was Minnesota (-18.1 percent). The per capita real value of property for 1966 in the United States ranged from a high of $18,796 in Wyoming to a low of $4,697 in Georgia, a multiple of over four.

TABLE 7.8

PER CAPITA REAL VALUE OF PROPERTY BY STATE:
1956, 1961, 1966

State	1956	1961	1966	1966 Rank	%Increase or Decrease 1956-66	Change In Rank 1956-66
Ala.	$3,778	$4,801	$5,869	46	55.3	−3
Alaska	NA	NA	5,901	45	NA	NA
Ariz.	7,679	9,368	9,109	15	18.6	−6
Ark.	5,149	5,973	7,564	31	46.9	−2
Cal.	8,739	11,105	12,079	3	38.2	+3
Colo.	7,334	8,253	8,461	19	15.3	−7
Conn.	6,747	7,151	9,629	10	42.7	+10
Del.	4,796	4,837	7,014	34	46.2	−1
Fla.	5,908	7,076	7,631	30	29.2	−6
Ga.	3,717	4,908	4,697	50	26.4	−6
Hawaii	NA	7,087	8,286	23	NA	NA
Idaho	8,671	9,653	11,908	4	37.3	+3
Ill.	7,213	7,709	9,021	16	25.1	−2
Ind.	7,714	7,987	8,450	20	9.5	−12
Iowa	7,561	8,266	9,587	11	26.8	−
Kan.	9,687	10,884	11,709	5	20.9	−1
Ky.	4,074	5,052	6,103	43	49.8	−3
La.	4,963	6,072	7,643	29	54.0	+2
Maine	3,656	4,388	6,184	42	69.1	+3
Md.	4,609	6,345	8,237	25	78.7	+9
Mass.	4,071	5,257	6,010	44	47.6	−3
Mich.	6,565	6,439	8,738	18	33.1	+3
Minn.	7,669	6,679	6,284	41	−18.1	−31
Miss.	3,533	5,162	6,389	39	80.8	+7
Mo.	5,832	7,052	8,339	22	43.0	+4
Mont.	11,343	13,512	10,033	8	−11.5	−6
Neb.	7,285	8,863	10,442	7	43.3	+6
Nev.	10,238	12,287	14,200	2	38.7	+1
N. Hampshire	4,553	5,277	6,636	37	45.8	−1
N.J.	5,278	6,075	6,648	36	26.0	−8
N. Mexico	6,822	8,135	8,123	26	19.1	−9
N.Y.	4,195	5,925	8,369	21	99.5	+18
N.C.	4,326	6,515	6,350	40	46.8	−3
N.D.	6,799	6,470	9,191	14	35.2	+4
Ohio	6,778	8,628	9,329	13	37.6	+6
Okl.	5,466	6,610	8,247	24	50.9	+3
Oregon	6,232	7,122	8,949	17	43.6	+6
Penn.	3,327	4,110	4,767	49	43.3	−2
R.I.	4,277	4,763	6,610	38	54.5	−
S.C.	4,586	6,048	8,020	27	74.9	+6
S.D.	7,050	7,464	9,408	12	33.4	+3
Tenn.	3,028	3,778	4,858	48	60.4	−
Texas	7,006	7,678	7,969	28	13.7	−12
Utah	9,641	10,249	9,927	9	3.0	−4
Vt.	3,917	4,214	4,985	47	27.3	−5
Va.	4,917	5,900	7,298	32	48.4	−
Wash.	6,439	8,443	10,743	6	66.8	+16
W. Va.	5,870	6,667	7,210	33	22.8	−8

TABLE 7.8 (cont.)

State	1956	1961	1966	1966 Rank	% Increase or Decrease 1956-66	Change In Rank 1956-66
Wis.	5,027	5,781	6,870	35	36.7	−5
Wyo.	12,969	15,528	18,796	1	44.9	—
U.S.	5,508	6,723	7,767	—	41.0	—

SOURCE: U.S. Department of Commerce, Bureau of the Census. "Trends In Assessed Valuations and Sales Ratios, 1956-1966," State and Local Government Special Studies No. 54, March, 1970.

[1]The per capita figure was obtained by dividing the state assessed valuation by the state average assessment ratio and by dividing that figure by the state resident population for each year.

The highest ranked states on per capita real value of property in 1966 were, in descending order, Wyoming ($18,796), Nevada ($14,200), California ($12,079), Idaho ($11,908), and Kansas ($11,709). The lowest ranked states were, in ascending order, Georgia ($4,697), Pennsylvania ($4,767), Tennessee ($4,858), Vermont $4,985), and Alabama ($5,869). Those states which gained the most in rank relative to other states between 1956 and 1966 were New York (+18), Washington (+16), Connecticut (+10), Maryland (+9), and Mississippi (+7). The states which declined the most in rank relative to other states between 1956 and 1966 were Minnesota (-31), Texas and Indiana (-12), New Mexico (-9), and New Jersey and West Virginia (-8).

Per Pupil Property Value

The most pervasive index used to compare local school districts has been the real value of property on an average daily attendance, average daily membership, or enrollment basis. Such property wealth units of comparison are considered appropriate since nationally 60 percent of local school district revenue is derived from the property tax.

The same cautions voiced in the previous section apply with respect to the gross assessed value of property and assessment ratio data gathered for this investigation. The reader is advised to interpret the data concerning real value of property per pupil with the expressed cautions in mind.

The per pupil real value of property for each state for 1956, 1961, and 1966 provides some indication of the extent to which property value is keeping pace with enrollment. One argument advanced against the property tax has been that it has not maintained its productivity proportional with need. If enrollment of elementary and secondary pupils is employed as the criterion of need, that argument is not supported by the data, which revealed that in most states per pupil real value of property increased substantially between 1956 and 1966.

In Table 7.9 is reported the per pupil real value of property for each state in 1956, 1961 and 1966. Also reported are the 1966 ranks of each state, the percentage increase or decrease between 1956 and 1966 and the change in rank relative to other states between 1956 and 1966.

TABLE 7.9

PER PUPIL REAL VALUE OF PROPERTY BY STATE:
1956, 1961, 1966

State	1956	1961	1966	1966 Rank	% Increase or Decrease 1956-66	Change In Rank 1956-66
Ala.	$16,133	$19,554	$23,944	47	48.4	−2
Alaska	NA	NA	26,055	44	NA	NA
Ariz.	37,729	37,605	38,685	18	2.5	−6
Ark.	22,307	24,566	32,540	33	45.8	−5
Cal.	49,066	48,335	52,177	3	6.3	−
Colo.	36,248	34,970	33,454	31	−7.7	−15
Conn.	40,138	38,028	46,385	8	15.6	−1
Del.	29,247	26,269	31,841	36	8.9	−8
Fla.	31,625	32,791	39,426	15	24.7	+8
Ga.	16,088	20,037	21,179	50	31.6	−4
Hawaii	NA	30,531	39,010	16	27.8	NA
Idaho	37,410	37,673	47,350	6	26.6	+7
Ill.	46,033	42,289	44,777	9	−2.7	−3
Ind.	38,698	36,738	35,988	23	−7.0	−13
Iowa	36,914	37,678	41,870	11	13.4	+3
Kansas	47,000	48,478	50,183	4	6.8	+1
Ky.	20,638	23,017	28,807	40	39.6	−
La.	25,013	28,173	33,556	30	34.2	+5
Maine	18,681	21,207	26,835	42	43.6	+1
Md.	26,746	32,456	37,625	20	40.7	+12
Mass.	26,206	29,084	31,594	37	20.6	−4
Mich.	35,716	30,139	36,313	22	1.7	−5
Minn.	28,921	32,150	27,076	41	−6.4	−12
Miss.	14,264	19,508	25,198	45	76.7	+2
Mo.	33,486	36,047	38,833	17	16.0	+4
Mont.	48,193	61,794	41,675	12	−13.5	−8
Neb.	39,633	43,454	47,661	5	20.3	+4
Nev.	50,980	47,563	59,850	2	17.4	−
N. Hampshire	27,971	29,695	33,804	29	20.9	+1
N.J.	33,847	33,849	34,478	25	1.9	−5
N. Mexico	30,723	32,539	30,410	39	−1.0	−14
N.Y.	27,795	33,997	47,016	7	69.2	+24
N.C.	18,634	26,499	26,824	43	44.0	+1
N.D.	34,088	29,288	40,481	14	18.8	+5
Ohio	37,893	43,269	41,512	13	9.6	−2
Okl.	24,535	28,205	33,874	28	38.1	−8
Oregon	32,295	31,376	38,282	19	18.5	+3
Penn.	20,856	23,038	24,966	46	19.7	−7
R.I.	30,007	29,878	37,171	21	23.9	+6
S.C.	19,120	23,468	32,224	34	68.5	+8
S.D.	35,028	32,508	35,644	24	1.8	−6
Tenn.	13,871	16,171	21,575	49	55.5	−1
Texas	36,557	34,281	33,962	27	−7.1	−12
Utah	39,896	38,089	34,287	26	−14.1	−18
Vt.	20,638	20,872	23,352	48	13.2	−8
Va.	24,446	27,233	32,794	32	34.1	+5
Wash.	30,507	37,820	42,520	10	39.4	+16
W. Va.	25,178	27,419	30,730	38	22.1	−4

TABLE 7.9 (cont.)

State	1956	1961	1966	1966 Rank	% Increase or Decrease 1956-66	Change In Rank 1956-66
Wis.	31,445	31,287	32,150	35	2.2	−11
Wyo.	59,276	60,341	72,161	1	21.7	–
U.S.	29,833	32,110	35,388	–	18.6	–

SOURCE: U.S. Department of Commerce, Bureau of the Census. TRENDS IN ASSESSED VALUATIONS AND SALES RATIOS, 1956-1966," STATE AND LOCAL GOVERNMENT SPECIAL STUDIES No. 54, March, 1970.

[1]The per pupil figure was obtained by dividing the state assessed valuation by the state average assessment ratio and by dividing that figure by state public elementary and secondary school enrollment in each respective year.

The average per pupil real value of property in the United States in 1966 was $35,388. This figure was $5,555 more per pupil (18.6 percent) than the 1956 figure of $29,833. The range in per pupil real value of property in 1966 extended from a low of $21,179 in Georgia to a high of $72,161 in Wyoming, a differential of more than three. The state with the greatest percentage increase in per pupil real value of property was Mississippi (76.7 percent). The state with the greatest percentage decrease was Utah (-14.1 percent).

The highest ranked states on per pupil real value of property in 1966 were, in descending order, Wyoming ($72,161), Nevada ($59,850), California ($52,177), Kansas ($50,183), and Nebraska ($47,661). The lowest ranked states were, in ascending order, Georgia ($21,179), Tennessee ($21,575), Vermont ($23,352), Alabama ($23,944), and Pennsylvania ($24,966). Those states that increased their rank the most between 1956 and 1966 were New York (+24), Washington (+16), Maryland (+12), and Florida and South Carolina (+8). Those states which lost rank between 1956 and 1966 were Utah (-18), Colorado (-15), New Mexico (-14), Indiana (-13), and Minnesota and Texas (-12).

State Fiscal Capacity Rankings

To conclude the analysis of the fiscal capacity of states, the measures used in the investigation were combined in a final table for comparison. In Table 7.10 will be found the rankings of the states for 1969 on per capita personal income, per household effective buying income, per capita effective buying income, per capita retail sales, per household retail sales, and for 1966 on per capita real value of property and per pupil real value of property.

When the same base is used, i.e., income, EBI, sales or property, state ranks tend to vary less than when state ranks are compared across bases. However, many states have very consistent rankings from one base to another. For example, Alabama ranks from 46 to 50 over all bases, Indiana ranks from 14 to 23 over all bases, Kentucky from 40 to 47, Maine from 35 to 42, etc.

Another interesting observation was that some states (including the District of

TABLE 7.10

RANKINGS OF STATES ON SEVEN FISCAL CAPACITY MEASURES

State	Per Cap. Personal Income 1969	Per House. EBI 1969	Per Cap. EBI 1969	Per Cap. Retail Sales 1969	Per House. Retail Sales 1969	Per Capita Property 1966	Per Pupil Property 1966
Ala.	48	49	50	49	49	46	47
Alaska	3	1	3	34	5	45	44
Ariz.	30	20	31	24	16	15	18
Ark.	50	50	48	44	48	31	33
Cal.	8	11	7	7	20	3	3
Colo.	22	25	22	18	23	19	31
Conn.	2	3	2	12	13	10	8
Del.	11	20	28	15	9	34	36
D.C.	1	4	1	1	3	NA	NA
Fla.	29	40	29	4	18	30	15
Ga.	37	33	38	39	38	50	50
Hawaii	13	2	17	38	4	23	16
Idaho	43	47	41	25	24	4	6
Ill.	6	5	4	6	10	16	9
Ind.	17	17	15	14	19	20	23
Iowa	25	26	19	4	6	11	11
Kansas	24	27	20	35	43	5	4
Ky.	44	43	42	47	47	43	40
La.	46	41	44	46	44	29	30
Maine	38	38	37	37	35	42	42
Md.	10	7	12	22	7	25	20
Mass.	9	8	8	11	14	44	37
Mich.	12	10	11	16	8	18	22
Minn.	21	15	18	17	15	41	41
Miss.	51	51	51	51	51	39	45
Mo.	27	32	25	20	34	22	17
Mont.	34	42	36	27	30	8	12
Neb.	20	30	26	8	17	7	5
Nev.	5	14	9	2	2	2	2
N. Hampshire	26	24	24	9	11	37	29
N.J.	7	6	6	20	21	36	25
N. Mexico	41	39	45	45	41	26	39
N.Y.	4	9	5	23	32	21	7
N.C.	42	36	43	43	38	40	43
N.D.	39	37	40	26	12	14	14
Ohio	14	12	14	29	28	13	13
Okl.	35	45	34	36	45	24	28
Oregon	23	34	23	13	29	17	19
Penn.	18	18	16	30	36	49	46
R.I.	14	16	13	33	40	38	21
S.C.	49	44	49	48	46	27	34
S.D.	36	35	35	31	27	12	24
Tenn.	45	46	46	40	42	48	49
Texas	33	31	32	31	31	28	27
Utah	40	28	39	42	37	9	26
Vt.	31	22	30	3	1	47	48

TABLE 7.10 (cont.)

State	Per Cap. Personal Income 1969	Per House. EBI 1969	Per Cap. EBI 1969	Per Cap. Retail Sales 1969	Per House. Retail Sales 1969	Per Capita Property 1966	Per Pupil Property 1966
Va.	32	23	33	41	39	32	32
Wash.	16	13	10	10	22	6	10
W. Va.	47	48	47	50	50	33	38
Wis.	19	19	21	28	26	35	35
Wyo.	28	29	27	19	25	1	1

Columbia) ranked in the highest five positions across many of the fiscal capacity measures. The District of Columbia ranked in the top five on five of seven fiscal capacity measures (the two measures of property were not available). Alaska ranked in the top five on four of seven measures, Connecticut on three of seven, and Nevada on five of seven. Even more consistent was the number of states that ranked in the lowest five positions across the measures of fiscal capacity. Alabama ranked in the lowest five positions on seven of seven fiscal capacity measures, Arkansas on four of seven, Mississippi on five of seven, South Carolina on four of seven, Tennessee on four of seven, and West Virginia on five of seven. The adage that a state "once poor is always poor" would seem to apply to these states.

FOOTNOTES

1. Advisory Commission on Intergovernmental Relations. MEASURES OF STATE AND LOCAL FISCAL CAPACITY AND TAX EFFORT. (Washington, D.C.: GPO, 1962), 4.

2. Allen D. Manvel, Consultant, "Interstate Differences in Revenue—Raising Capacity and Effort," Paper presented to the Annual Conference of the National Association of Tax Administrators, Detroit, Michigan, June 10, 1970.

3. Advisory Commission on Intergovernmental Relations, 4.

4. L. L. Ecker-Racz. THE POLITICS AND ECONOMICS OF STATE-LOCAL FINANCE. (Englewood Cliffs, N.J.: Prentice-Hall, 1970), 33.

CHAPTER VIII

FINANCING EDUCATION IN THE CONTEXT OF THE FISCAL CAPACITY, REVENUE, AND EXPENDITURE PATTERNS OF LOCAL GOVERNMENTS

Given the voluminous report of the results of the various analyses performed with the data which were gathered in this project, the appropriate question at this juncture is: What can be said with regard to the fiscal characteristics of various types of school districts and the units of local government which are associated with them? In this concluding chapter we will attempt to answer this question and discuss some of the implications for financing education suggested by the results obtained in this study.

Some Limitations of the Study

It is well to reiterate at the outset some of the attributes of the sample, the data, and the statistical procedures employed in the analyses which could have affected the results which were obtained, and of which one who wishes to generalize from the findings of the study should be cognizant.

Limitations Associated with the Sample

The sample of school districts employed in the study was a proportional random sample drawn from eight states carefully selected to provide both geographic dispersion and widespread distribution with regard to social, economic, and demographic characteristics which previous researchers have shown to influence fiscal capacity, revenue, and expenditure patterns of school districts and other units of local government. In the major urban core city category, the sample consisted of all thirteen school districts which met the criteria for classification in this category. A proportional random sample of thirty-five districts was drawn in each of the other six categories. However, it was necessary to eliminate one school district from the minor urban core city category and one school district from the developing suburb category because certain data for these two districts (or for the municipality or county associated with them) were not available.

It is true that the procedure employed in drawing the sample of school districts tends to give greater representation to the states which had a relatively large number of school districts. Some may feel, for example, that New York (with seventy-four school districts) and Texas (with sixty-five school districts were over represented in the sample, and that Florida (with eighteen school districts) was under represented. The difference arose primarily in the two suburb categories where Florida (because of its county-unit district organization) was not represented in the sample and where New York and Texas were represented by forty and nineteen school districts, respectively. However, by the definition we employed, suburbs were associated with standard metropolitan statistical areas; and New York and Texas had a preponderance of the standard metropolitan statistical areas in the eight states from which the sample was drawn.

Others may feel that exclusion from the sample of school districts which did not have at least 1,500 pupils in average daily membership may have short changed some of the less populous states. We maintain, however, that the characteristics of school districts with fewer than 1,500 pupils in average daily membership are very similar to those of school districts included in our small town category.

Limitations Associated with the Data

One must realize that all units of local government—school districts, municipalities and counties—are creatures of the state. They were created by the state, either by statute or charter, and reflect decisions by the state with regard to how units of local government should be financed. In some states, local units of government receive considerable revenue from shared taxes or grants-in-aid from the state. In other states, virtually all revenue received by local units of government is derived from local taxes and the state's contribution is minimal. These differences are, of course, reflected in the revenue patterns of units of local government.

It may be argued that it is inappropriate to compare units of local government on the basis of their sources of revenue. We would argue, however, that revenue sources reflect fundamentally the fiscal capacity of a unit of local government in that they reflect the extent to which a unit of local government is able to tap the fiscal resources within its boundaries to finance local governmental services. A tax base which cannot be tapped, either directly by a local tax or indirectly through shared taxes or subventions, cannot legitimately be considered to reflect the fiscal capacity of a unit of local government.

Data concerning the revenue and expenditure of school districts were obtained directly from state department of education publications or from the official reports filed by the school districts. To the extent that local district reporting was accurate, and to the extent that expenditures were properly categorized according to function, we are confident that the data concerning school district revenue and expenditure were accurate.

Data concerning the revenue and expenditure of municipalities and counties were obtained from the *Census of Governments,* since reports concerning the revenue and expenditure of municipalities and counties were not collected by each of the eight states from which the sample of school districts was drawn. We assumed that the data reported in the *Census of Governments* were accurate and properly categorized by function and made no effort to check the validity of the data. In cases where data concerning the municipality or county in which we were interested were not reported in the *Census of Governments,* we utilized the average revenue and expenditure reported for units of similar size in that state. A further complication arose from the fact that the fiscal year of municipalities and counties varied from one state to another. Consequently, the data reported in the *Census of Governments* did not all cover the same twelve month period.

Some limitations also were imposed by the nature of the data and the data transformations which were required. The data concerning revenue and expenditure of municipalities and counties were rounded to the nearest $1,000; data concerning the population of the various municipalities and counties were rounded to the nearest 100. Obviously, revenue per capita and expenditure per

capita computed from the above data represent an approximation of the true expenditure per capita rather than the exact expenditure per capita.

It was necessary to estimate the average daily membership of school districts in Texas and New York for the years in which only average daily attendance was reported. This transformation was accomplished by using the ratio of average daily attendance to average daily membership for the entire state to estimate the average daily membership of each district.

Since no data concerning the total population of the school districts in the sample were available, school district populations were obtained by using the ratio of average daily membership to total district population in Wisconsin school districts categorized according to our taxonomy to estimate the total population of each school district in the sample. Obviously, use of this procedure required that we make several simplifying assumptions. For example, it required that we assume that in each category there would be the same proportion of non-public to public school enrollment and the same age distribution of population in each state as there is in Wisconsin. To the extent that these assumptions were in error, the results of the analyses based on per capita revenue and expenditure of school districts which were reported in Chapter VI are in error.

Also, certain revenue categories were not completely compatible when school district, municipal, and county revenue and expenditure were combined for the analyses reported in Chapter VI. For example, no distinction was drawn between revenue from local property tax and revenue from other local taxes in the revenue data. Therefore, we assumed that all county revenue from taxes was derived from a local property tax and it was so classified. Likewise, in the county revenue data no distinction was drawn between revenue from the state and revenue from other governmental sources, and all revenue from these sources was classified as intergovernmental revenue.

With regard to fiscal capacity, the data concerning retail sales and effective buying income were obtained from *Sales Management's* "Survey of Buying Power" and are subject to the definitions and limitations regarding these measures which were discussed in Chapter VII. Data concerning the market value of property in each school district were obtained from state education department records in all states except Texas and Florida. In Texas, the market value of property for each school district was based upon the value reported for each school district in a recent major study of the Texas state support program. In Florida, the market value of property was estimated on the basis of the ratio of assessed to true value of property reported by the state comptroller.

In much of the previous research, data concerning economic and sociological variables also were utilized. For example, a distinction has been drawn between residential suburbs and industrial suburbs, and a further distinction has been drawn between high income residential suburbs and low income residential suburbs. The data which were available were not adequate to permit us to utilize such a categorization. Data such as percent of the population engaged in various types of occupations, number of years of school completed by the adult population, percent of the population nonwhite, etc., might have been useful, but such data simply were not available for our sample for the years 1962 and 1967.

Limitations Associated with the Statistical Procedures

Factor analytic procedures were employed in this study in an attempt to identify a more parsimonious taxonomy for classifying school districts, municipalities and counties. The factor matrices were examined only with this purpose in mind. Others may wish to examine the results we have reported with other purposes in mind. We will be pleased if serendipitous findings emerge from such efforts.

The multivariate analyses of variance program utilized in this investigation is a powerful statistical tool. However, it does have limitations which influence the results obtained as well as the interpretation which may be given such results. Although theoretically further analysis is precluded once a null hypothesis is rejected, we felt it necessary to relax this restriction in order to extract the maximum amount of information from the data. The results of analyses which were conducted after rejection of a null hypothesis should be considered with this restriction in mind. It should further be noted that the order in which comparisons between categories are made may influence the extent to which significant differences between them are identified. That is, a different order of comparison of categories could result in different findings, at least with regard to the significance of the multivariate F ratio obtained.

The univariate and step-down F ratios are useful in determining the relative contribution of each variable to the variance between the categories being compared. The univariate F ratios provide some indication of the extent to which a variable, considered alone, varies between two categories. The step-down F ratios indicate the extent to which a variable contributed to a difference between categories when its intercorrelation with the variables previously entered into the equation is considered. Thus, the step-down F ratio is affected by the sequence in which variables are entered and is accurate only for a particular position in a given array of variables. That is, a change in the sequence in which variables were entered, or a change in the array of variables, would undoubtedly alter the step-down F ratio obtained for a given variable.

The discriminant function coefficients also are valid only for the particular array of variables and are quite sensitive to changes in the sample. Consequently, a change in the array of variables or in the composition of the sample would be likely to change the discriminant function coefficient of the given variable.

Findings and Conclusions: Fiscal Capacity of School Districts

In Table 8.1 are summarized the results obtained from analyses of data concerning the fiscal capacity of school districts. We believe that the results obtained from the analyses of fiscal capacity of school districts also are applicable with regard to the fiscal capacity of the categories of municipalities which were studied. It will be recalled that three measures of fiscal capacity—market value of property, retail sales, and effective buying income—were accepted as satisfactory indices of the three generally recognized components of fiscal capacity. Data on market value of property were obtained for each school district; data on retail sales and effective buying income were obtained for the municipality most closely associated with each school district. Property values

TABLE 8.1

SUMMARY OF THE RESULTS OF THE ANALYSES OF DATA CONCERNING FISCAL CAPACITY OF SCHOOL DISTRICTS

	p of Multivariate F		Univariate F of p ≤ .01		Step-down F of p ≤ .01		Best Discriminator	
Comparison	1962	1967	1962	1967	1962	1967	1962	1967
A vs. B	.349	.011	None	None	None	EBI/hsld.....001	EBI/capita	EBI/capita
All Remaining sources	<.0001	<.0001	EBI/cap.....0001 EBI/hsld.....0001	RS/cap.....0001 EBI/cap.....0001 EBI/hsld.....0001	EBI/cap.....0001	RS/cap.....0001 EBI/cap.....0001 EBI/Hsld....0001		
*B vs. C	.678	.006	None	None	None	EBI/hsld.....0008	EBI/household	EBI/household
*C vs. D	.028	.0003	None	RS/cap.....001	None	RS/cap.....001 EBI/hsld.....001	EBI/household	EBI/household
*D vs. E	.006	.0001	None	EBI/cap.....0001 EBI/hsld.....0001	EBI/cap.....0006	EBI/cap.....0001	RS/capita EBI/capita	EBI/household RS/capita
*E vs. F	<.0001	<.0001	EBI/cap.....0001 EBI/hsld.....0001	RS/cap.....0008 EBI/cap.....0001 EBI/hsld.....0001	EBI/cap.....0001	RS/cap.....0008 EBI/cap.....0001 EBI/hsld.....0003	RS/capita	EBI/household
*F vs. G	.018	<.0001	RS/cap.....01	RS/cap.....0001 RS/hsld.....004 EBI/cap.....002 EBI/hsld.....004	RS/cap.....01	RS/cap.....0001	EBI/capita	RS/capita

*Comparison completed after rejection of null hypothesis

NOTES: RS = Retail sales
EBI = Effective buying income

Category A = Major Urban Core City
Category B = Minor Urban Core City
Category C = Independent City
Category D = Established Suburb
Category E = Developing Suburb
Category F = Small City
Category G = Small Town

were expressed on a per pupil in average daily membership basis; retail sales and effective buying income were expressed on per capita and per household bases. If one is willing to assume that the value of property in a school district is indicative of the value of property in the municipality most closely associated with the school district, one may then state that the relative fiscal capacity determined for each category of school district utilized in this study closely approximates the relative fiscal capacity of each category of municipality. (Conversely, the procedure we employed required that we assume that the per capita and per household retail sales and effective buying income of the municipality most closely associated with a school district are acceptable indices of the fiscal capacity of the school district with regard to these two components of fiscal capacity.)

Based on the results summarized in Table 8.1 and the detailed analyses presented in Chapter III, and subject to the limitations which have been noted, the following conclusions are drawn:

1. The difference in the fiscal capacity of the major urban core city category and the minor urban core city category increased between 1962 and 1967. In 1962 the difference between these two categories was not statistically significant. In 1967 the difference between the two categories was statistically significant at the .05 level.

2. In both 1962 and 1967 a difference statistically significant at the .0001 level existed when all remaining sources of variation were compared.

3. When the restriction concerning further analysis after rejection of the null hypothesis was relaxed and all planned comparisons were performed, it was concluded that:

A. The difference in the fiscal capacity of the minor urban core city category and the independent city category increased substantially between 1962 and 1967. The difference between the two categories was not statistically significant in 1962 but was statistically significant at the .01 level in 1967.

B. The difference in the fiscal capacity of the independent city category compared to the established suburb category increased from 1962 to 1967. In 1962 the difference between these two categories was statistically significant at the .05 level; in 1967 the difference was statistically significant at the .001 level.

C. The difference in the fiscal capacity of the established suburb category compared with the developing suburb category increased between 1962 and 1967. The difference between the two categories was statistically significant at the .01 level in 1962 and was statistically significant at the .0001 level in 1967.

D. The developing suburb category differed substantially from the small city category in terms of fiscal capacity in both 1962 and 1967. The difference between the two categories was statistically significant at the .0001 level in both 1962 and 1967.

E. The difference between the fiscal capacity of the small city category and the small town category increased between 1962 and 1967. The difference between the two categories in 1962 was statistically significant at the .05 level; in 1967 the difference was statistically significant at the .0001 level.

4. With regard to the measure of fiscal capacity which best discriminated between the categories compared, it was concluded that:

A. Effective buying income per capita best discriminated between the major urban core city category and the minor urban core city category in both 1962 and 1967.

B. Effective buying income per household best discriminated between the minor urban core city category and the independent city category in both 1962 and 1967.

C. Effective buying income per household best discriminated between the independent city category and the established suburb category in both 1962 and 1967.

D. Retail sales per capita and effective buying income per capita best discriminated between the established suburb category and the developing suburb category in 1962. In 1967 effective buying income per household and retail sales per capita best discriminated between these two categories.

E. Retail sales per capita best discriminated between the developing suburb category and the small city category in 1962; in 1967 effective buying income per household best discriminated between these two categories.

F. Effective buying income per capita best discriminated between the small city category and the small town category in 1962. In 1967 retail sales per capita best discriminated between these two categories.

G. Property value per pupil in average daily membership did not discriminate effectively between categories in any of the comparisons.

5. With regard to the univariate F ratios, it was concluded that:

A. Effective buying income per capita and effective buying income per household consistently varied significantly between the categories which were compared.

B. Property value per pupil in average daily membership did not vary significantly between any of the categories compared.

C. Retail sales per household varied significantly between categories in only one instance (F vs. G, 1967.)

6. With regard to the step-down F ratios, it was concluded that:

A. In 1962 effective buying income per capita was the variable which most frequently contributed to a significant difference between the categories being compared.

B. In 1967 effective buying income per household and retail sales per capita appeared with equal frequency as major contributors to the variation which was found between categories.

In summary, in every instance the difference in the fiscal capacity of the school district categories—and assumedly the municipal categories—which were compared increased between 1962 and 1967. In no instance did the market value of property contribute to the significant differences which were found. Effective buying income, measured on either a per capita or a per household basis, was the major source of variation in fiscal capacity.

Findings and Conclusions: Revenue and Expenditure of School Districts

The factor matrices obtained from the four factor analysis procedures did not reveal a more parsimonious taxonomy for categorizing school districts. In no instance did a factor matrix account for more than 57 percent of the total variance associated with the array of variables, and in most instances the factor matrices failed to account for as much as 50 percent of the total variance.

In Table 8.2 are summarized the results obtained from the analyses of data concerning the sources of revenue of school districts. Based on the results summarized in Table 8.2 and the detailed results which were reported in Chapter III, and subject to the limitations identified earlier in this chapter, the following conclusions are drawn.

1. No statistically significant difference existed between school districts in the major urban core city category and school districts in the minor urban core city category in either 1962 or 1967.

2. No statistically significant difference existed between school districts in the established suburb category and school districts in the developing suburb category in either 1962 or 1967.

3. When all remaining sources of variation were combined a difference statistically significant at the .0001 level was found in both 1962 and 1967.

TABLE 8.2

SUMMARY OF THE RESULTS OF THE ANALYSES OF DATA CONCERNING SOURCES OF REVENUE OF SCHOOL DISTRICTS

	p of Multivariate F		Univariate F of p ≤ .01		Step-down F of p ≤ .01		Best Discriminator	
Comparison	1962	1967	1962	1967	1962	1967	1962	1967
A vs. B	.406	.08	None	Other local taxes 003	None	Other local taxes 003	Other local taxes	Other local taxes
D vs. E	.357	.735	None	None	None	None	Other governmental sources	Other local taxes
All remaining sources	<.0001	<.0001	State .....0001 Prop. tax....0001	State .....0001 Federal.....006 Prop. tax....0001	State .....0001 Other govt. sources.....009 Prop. tax....0001	State .....0001 Federal.....006 Prop. tax....0002		
*B vs. C	.023	.017	None	State 006	None	State 006	State sources	State sources
*C vs. D	.012	.014	State 0002	State 001	State 0002	State 001	State sources	State sources
*E vs. F	.006	<.0001	Prop. tax....0005	Prop. tax....0001	Prop. tax....0006	Prop. tax....0001	Property tax	Property tax
*F vs. G	.051	.197	State 003	None	State 003	None	State sources	State sources

*Comparison completed after rejection of null hypotheses

4. When the restriction with regard to further analysis after rejection of an hypothesis was relaxed and all planned comparisons completed, it was concluded that:

   A. A difference statistically significant at the .05 level existed between school districts in the minor urban core city category and school districts in the independent city category in both 1962 and 1967.

   B. A difference statistically significant at the .05 level existed between school districts in the independent city category and the school districts in the established suburb category in both 1962 and 1967.

   C. A difference statistically significant at the .01 level in 1962 and at the .0001 level in 1967 existed between school districts in the developing suburb category and school districts in the small city category.

   D. No statistically significant difference existed between school districts in the small city category and school districts in the small town category in either 1962 or 1967.

5. With regard to which sources of revenue best discriminated between the categories compared, it was concluded that:

   A. Revenue from other local taxes best discriminated between the major urban core city category and the minor urban core city category in both 1962 and 1967.

   B. Revenue from state sources best discriminated between the minor urban core city category and the independent city category in both 1962 and 1967.

   C. Revenue from state sources best discriminated between the independent city category and the established suburb category in both 1962 and 1967.

   D. Revenue from other govei mental sources and revenue from all other sources best discriminated between the established suburb category and the developing suburb category in both 1962 and 1967.

   E. Revenue from property taxes best discriminated between the developing suburb category and the small city category in both 1962 and 1967.

   F. Revenue from state sources best discriminated between the small city category and the small town category in both 1962 and 1967.

6. With regard to the univariate F ratios, the variable identified as the best discriminator also was the only variable which varied significantly between the categories being compared. No variable consistently exhibited a significant difference in all of the comparisons which were made.

7. With regard to the step-down F ratios, in the comparisons where a significant difference was found, either revenue from state sources or revenue from property taxes contributed most to the variation between the categories compared.

In Table 8.3 are summarized the results obtained from the analyses of data concerning the purposes of expenditure by school districts. Based on the results summarized in Table 8.3 and the detailed results reported in Chapter III, and subject to the limitations identified earlier, the following conclusions are drawn.

1. A difference statistically significant at the .05 level existed between the major urban core city category and the minor urban core city category in 1962; in 1967, the difference between these two categories was not statistically significant.

2. When all remaining sources of variation were combined, a difference statistically significant at the .0001 level was found in both 1962 and 1967.

3. When the restriction with regard to further analysis after rejection of a null hypothesis was relaxed and all planned comparisons completed, it was concluded that:

   A. A difference statistically significant at the .0001 level existed between school districts in the minor urban core city category and school districts in the independent city category in both 1962 and 1967.

   B. A difference statistically significant at the .0001 level existed between school districts in the independent city category and school districts in the established suburb category in both 1962 and 1967.

   C. A difference statistically significant at the .0001 level in 1962 and at the .01 level in 1967 existed between school districts in the established suburb category and school districts in the developing suburb category.

   D. A difference statistically significant at the .0001 level existed between school districts in the developing suburb category and school districts in the small city category in both 1962 and 1967.

   E. A difference statistically significant at the .0001 level in 1962 and at the .001 level in 1967 existed between school districts in the small city category and school districts in the small town category.

5. With regard to which purposes of expenditure best discriminated between the categories compared, it was concluded that:

TABLE 8.3

SUMMARY OF THE RESULTS OF THE ANALYSES OF DATA CONCERNING PURPOSES OF EXPENDITURE OF SCHOOL DISTRICTS

	p of Multi-variate F		Univariate F of p ≦ .01		Step-down F of p ≦ .01		Best Discriminator	
Comparison	1962	1967	1962	1967	1962	1967	1962	1967
A vs. B	.033	.073	Com. serv. ....006 Op. & Mnt. ...002	Attendance..... services.....004	Com. serv. ....005 Op. & Mnt. ...001	Attendance..... services.....004	Operation and Maintenance	Fixed Charges
All Remaining Sources	<.0001	<.0001	Transp. .....0001 Cap. out. .....0001 Debt serv. .....006 Admin. .....0005 Att. serv. .....002 Health .....0001 Fix. ch. .....002 Other exp. ....0001 Long t.debt. .0001	Transp. .....0001 Cap. out. .....0003 Debt. serv. ....0001 Admin. .....0001 Instruct. .....0001 Att. serv. .....0008 Health .....0001 Fix. Ch. .....0001 Lont t.debt. ..0001	Transp. .....0001 Admin. .....002 Long t.debt. .0001	Transp. .....0001 Debt serv. .....0001 Admin. .....001 Instruct. .....0001 Long t. debt .002		
*B vs. C	<.0001	<.0001	Transp. .....0001 Debt serv. .....007 Other exp. ....006 Long t.debt. .008	Transp. 0001	Transp. .....0001 Debt serv. .....004 Admin. .....008 Long t.debt. .002	Transp. .....0001 Instruct. 002	Transportation	Transportation

TABLE 8.3 (cont.)

	p of Multi-variate F		Univariate F of p ≤ .01		Step-down F of p≤.01		Best Discriminator	
Comparison	1962	1967	1962	1967	1962	1967	1962	1967
*C vs. D	<.0001	<.0001	Transp. .....0001 Long t.debt. .005	Transp. .....0001 Cap. out. .....009 Debt serv. .....0001 Admin. .....0001 Long t.debt. .0001	Transp. .....0001 Admin. 007	Transp. .....0001 Admin. .....006 Instruc. 0006	Transportation	Transportation
*D vs. E	<.0001	<.002	Health .....008 Fixed ch. .....003 Other exp. ....0001 Long t.debt. .003	Debt serv. .....0005 Admin. .....001 Instruct. .....0007 Fix. ch. 007	Other exp. 007	Debt serv. .....0001 Admin. 008	Long term debt	Debt Service
*E vs. F	<.0001	<.0001	Transp. .....0002 Cap. out. .....0001 Admin. .....008 Health .....0001 Other exp. ....0008 Long t.debt. .0001	Transp. .....0001 Cap. out. .....0003 Debt serv. .....0001 Admin. .....0001 Instruct. .....0006 Health .....0005 Fix. ch. .....0006 Long t.debt. .0001	Transp. .....0002 Cap. out. .....0006 Long t.debt. .008	Transp. .....0001 Cap. out. .....002 Debt. serv. ....0006 Long t.debt. .0002	Long term debt	Long term debt
*F vs. G	<.0001	<.0002	Transp. 0001	Transp. 0001	Transp. ....0001 Long t.debt. .002	Transp. 0001	Transportation	Transportation

*Comparison completed after rejection of null hypothesis

A. Expenditure for operation and maintenance best discriminated between school districts in the major urban core city category and school districts in the minor urban core city category in 1962; in 1967 expenditure for fixed charges best discriminated between them.

B. Expenditure for transportation best discriminated between school districts in the minor urban core city category and the school districts in the independent city category in both 1962 and 1967.

C. Expenditure for transportation best discriminated between school districts in the independent city category and school districts in the established suburb category in both 1962 and 1967.

D. Long term debt per pupil in average daily membership best discriminated between school districts in the established suburb category and school districts in the developing suburb category in 1962. Expenditure for debt service best discriminated between these two categories in 1967.

E. Long term debt best discriminated between school districts in the developing suburb category and school districts in the small city category in both 1962 and 1967.

F. Expenditure for transportation best discriminated between school districts in the small city category and school districts in the small town category in both 1962 and 1967.

6. With regard to the univariate F ratios, expenditure for transportation and long term debt most consistently exhibited a significant variation between the categories compared.

7. With regard to the step-down F ratios, in the comparisons in which statistically significant differences were found, expenditure for transportation was the major contributor to the significant variation between categories in four of the five comparisons.

In summary, differences did indeed exist between several of the categories compared with regard to both sources of revenue and purposes of expenditure. However, no significant difference with regard to their sources of revenue existed between school districts in the major and minor urban core city categories, school districts in the established and developing suburb categories, and school districts in the small city and small town categories. Where significant differences with regard to sources of revenue existed between the categories compared, the difference was due primarily to either revenue from state sources or revenue from property taxes. With regard to the purposes of expenditure, significant differences existed between all categories compared with the exception of school districts in the major and minor urban core city categories in

1967. Expenditure for transportation was most often the major contributor to the significant variation, with long term debt also an important contributor in some comparisons.

Findings and Conclusions: Revenue and Expenditure of Municipalities

The results obtained from the four factor analysis procedures to which the data were subjected did not reveal a more parsimonious taxonomy within which municipalities might be categorized. In no instance did a factor matrix account for more than about 67 percent of the total variance associated with the array of variables.

In Table 8.4 are summarized the results obtained from the analyses of data concerning the sources of revenue of municipalities. Based on the results summarized in Table 8.4 and the detailed results reported in Chapter IV, and subject to the limitations identified at the beginning of this chapter, the following conclusions are drawn.

1. The difference between the major urban core city category and the minor urban core city category diminished between 1962 and 1967, declining from a difference which was statistically significant at the .05 level in 1962 to a difference which was not statistically significant in 1967.

2. When all remaining sources of variation were combined, a difference statistically significant at the .0001 level existed in both 1962 and 1967.

3. When the restriction with regard to further analysis after rejection of an hypothesis was relaxed and all planned comparisons were completed, it was concluded that:

   A. The difference between the minor urban core city category and the independent city category declined between 1962 and 1967. In 1962 the difference between these two categories was statistically significant at the .05 level. In 1967 no statistically significant difference existed between these two categories.

   B. A marked difference existed between the independent city category and the established suburb category in both 1962 and 1967. The difference was statistically significant at the .0001 level in both years.

   C. No difference existed between the established suburb category and the developing suburb category in either 1962 or 1967.

   D. No difference existed between the developing suburb category and the small city category in either 1962 or 1967.

   E. The difference between the small city category and the small town category declined between 1962 and 1967. A difference statistically significant at the .01 level was found in 1962, but the difference between these two categories was not statistically significant in 1967.

TABLE 8.4

SUMMARY OF THE RESULTS OF THE ANALYSES OF DATA CONCERNING SOURCES OF REVENUE OF MUNICIPALITIES

	p of Multivariate F		Univariate F of p ≦ .01		Step-down F of p ≦ .01		Best Discriminator	
Comparison	1962	1967	1962	1967	1962	1967	1962	1967
A vs. B	.013	.056	Other local taxes.....005	None	Other local taxes.....007	None	Other local taxes	State sources
All Remaining Sources	<.0001	<.0001	State.....008 Oth. govt. .....0004 Prop. tax. .....0001 O. loc. sor. ....0001 O. loc. sor. ....0001 Utilities 0002	Other local taxes.....0003 Other local sources .....0001 Utilities 006	State.....008 Oth. govt. .....009 Prop. tax .....002 O. loc. tax. ...0002 O. loc. sor. ....002 Utilities 01	Other local taxes.....0009 Other local sources 0008		
*B vs. C	.014	.104	None	Other local taxes.....009	None	Other local taxes.....009	Property tax	Other local taxes
*C vs. D	<.0001	<.0001	State.....0001 Oth. govt. .....0008 Prop. tax. .....0001 O. loc. tax. ...002 O. loc. sor. 0001	State .....0008 Other local sources 0001	State.....0002 Other local taxes.....003 Other local sources 0001	State.....0008 Other local sources 0001	Property tax	State sources
*D vs. E	.657	.723	None	None	None	None	taxes	Utilities
*E vs. F	.206	.166	None	None	None	None	Utilities	Utilities
*F vs. G	.008	.344	Utilities 0009	None	Utilities 0008	None	Utilities	Utilities

*Comparison completed after rejection of null hypothesis

4. With regard to which source of revenue best discriminated between categories, it was concluded that:

   A. Revenue from other local taxes best discriminated between the major urban core city and the minor urban core city category in 1962; revenue from state sources best discriminated between them in 1967.

   B. Revenue from property taxes best discriminated between the minor urban core city category and the independent city category in 1962; revenue from other local taxes best discriminated between them in 1967.

   C. Revenue from property taxes best discriminated between the independent city category and the established suburb category in 1962. In 1967 revenue from state sources best discriminated between these two categories.

   D. Revenue from other local taxes best discriminated between the established suburb category and the developing suburb category in 1962; revenue from utilities best discriminated between them in 1967.

   E. Revenue from utilities best discriminated between the developing suburb category and the small city category in both 1962 and 1967.

   F. Revenue from utilities best discriminated between the small city category and the small town category in both 1962 and 1967.

5. With regard to the univariate F ratios, no source of revenue consistently exhibited a significant variation between the categories compared.

6. With regard to the step-down F ratios, no source of revenue contributed consistently to the variation in those comparisons in which a significant difference was found between the categories compared.

In Table 8.5 are summarized the results obtained from the analyses of data concerning the purposes of expenditure by municipalities. Based on the results summarized in Table 8.5 and the results described in detail in Chapter IV, and subject to the limitations noted previously, the following conclusions are drawn.

1. The difference between the major urban core city category and the minor urban core city category increased between 1962 and 1967, moving from a difference which was statistically significant at the .05 level in 1962 to a difference which was statistically significant at the .001 level in 1967.

2. When all remaining sources of variation were combined, a difference statistically significant at the .001 level existed in both 1962 and 1967.

TABLE 8.5

SUMMARY OF THE RESULTS OF THE ANALYSES OF DATA CONCERNING PURPOSES OF EXPENDITURE OF MUNICIPALITIES

	p of Multivariate F		Univariate F of p ≦ .01		Step-down F of p ≦ .01		Best Discriminator	
Comparison	1962	1967	1962	1967	1962	1967	1962	1967
A vs B	.014	.0008	Police..... .0003	Parks, etc. ..... .005	Police..... .0004 Pub. bldgs. .008	Police..... .004 Fire..... .01 Parks, etc... .005 Fin. admin. .008	Education less capital outlay Education	General expenditures less capital outlay Police
All Remaining Sources	<.0001	<.0001	All variables except health, sewerage, fin. admin, gen. con., pub. bldgs, unalloc., and utilities	All variables except public welfare, hospitals, sewerage, sanitation, fin. admin., gen. con. pub. bldgs, unalloc., and utilities Highways..... .002	T. gen. exp. .0001 Highways... .0001 Health..... .0002 Fire..... .0001 Parks, etc. . .007 Unalloc. .... .0002 Cap. out. ... .0002	T. gen. exp. .0001 Highways... .0001 Hospitals.... .005 Fire..... .0001 Gen. con. .. .0001 Unalloc. .... .001 Long t.debt. .004	General	General

TABLE 8.5 (cont.)

Comparison	p of Multivariate F 1962	p of Multivariate F 1967	Univariate F of p≦.01 1962	Univariate F of p≦.01 1967	Step-down F of p≦.01 1962	Step-down F of p≦.01 1967	Best Discriminator 1962	Best Discriminator 1967
			Highways ..... .0001	Police ..... .002		Education .. .002	expenditures less	expenditures less
			Fire ..... .0001	Fire ..... .0001		Highways ... .0001	capital outlay	capital outlay
			Sanita. ..... .0007	Fin. admin. .. .005		Hospitals .... .003		
			Pub. bldgs. ... .0002	Unalloc. ..... .008	Highways ... .0001	Fire ..... .0001		
			Interest ..... .0003	Interest ..... .0001	Health ..... .0002	Gen. cont. . .0002		
*B vs C	<.0001	<.0001	Cap. out. ..... .004	Long t. debt. .0001	Fire ..... .0003	Unalloc. .... .006	Education	Fire
			T. gen. exp. .. .0001	T. gen. exp. .. .0001			General	General
			Gen. ex. less	Gen. ex. less			expenditures less	expenditures less
			cap. out. ..... .0001	cap. out. ..... .0001			capital outlay	capital outlay
			Education ..... .0001	Education ..... .0002				
			Ed. cap. out. .0001	Ed. cap. out. .0004				
			Welfare ..... .0001	Welfare ..... .003				
			Hospitals ..... .0002	Health ..... .0001		T. gen. exp. .0001		
			Police ..... .008	Fire ..... .0001		Highways ... .0001		
			Fire ..... .0001	Parks, etc. ..... .001		Health ..... .002		
			Parks, etc. .... .0002	Libraries ..... .003	T. gen. exp. .0001	Fire ..... .0001		
			Libraries ..... .001	Interest ..... .0001	Highways ... .0001	Gen. con. ... .0001		
			Interest ..... .0001	Cap. out. ..... .0001	Fire ..... .0002	Interest ..... .002		
			Cap. out. ..... .0001	Long t. debt. .0001	Parks, etc. . .0005	Cap. out. ... .006	Fire	Capital outlay
*C vs D	<.0001	<.0001	Long t. debt. .0001		Gen. con. .. .008	Long t. debt .0006		

TABLE 8.5 (cont.)

	p of Multi-variate F		Univariate F of p ≦ .01		Step-down F of p ≦ .01		Best Discriminator	
Comparison	1962	1967	1962	1967	1962	1967	1962	1967
*D vs E	.609	.720	None	None	None	None	Education	Total general expenditure Hospitals
*E vs F	.051	.207	None	None	Highways... .008	None	General expend-itures less capital outlay Education less capital outlay	Total general expenditures Capital outlay
*F vs G	<.0001	<.0001	Cap. out. ..... .002	None	Unalloc. .... .0002 Cap. out. ... .0001	Fire..... .001 Unalloc. .... .0001	General expend-itures less capital outlay Education less capital outlay	General expend-itures less capital outlay Capital outlay

*Comparison completed after rejection of null hypothesis

3. When the restriction with regard to further analysis after rejection of an hypothesis was relaxed and all planned comparisons were completed, it was concluded that:

   A. A difference statistically significant at the .0001 level existed between the minor urban core city category and the independent city category in both 1962 and 1967.

   B. A difference statistically significant at the .0001 level existed between the independent city category and the established suburb category in both 1962 and 1967.

   C. No difference existed between the established suburb category and the developing suburb category in either 1962 or 1967.

   D. No difference existed between the developing suburb category and the small city category in either 1962 or 1967.

   E. A difference statistically significant at the .0001 level existed between the small city category and the small town category in both 1962 and 1967.

4. With regard to which purposes of expenditure best discriminated between the categories compared, it was concluded that:

   A. Expenditure for education (both with and without capital outlay) best discriminated between the major urban core city category and the minor urban core city category in 1962. In 1967 general expenditures exclusive of capital outlay and expenditure for police protection best discriminated between these two categories.

   B. General expenditures exclusive of capital outlay best discriminated between the minor urban core city category and the independent city category in both 1962 and 1967.. With regard to the specific functions, expenditure for education was the most useful in discriminating between these two categories in 1962 and expenditure for fire protection was the most useful in 1967.

   C. General expenditures exclusive of capital outlay best discriminated between the independent city category and the established suburb category in both 1962 and 1967. With regard to specific functions, expenditure for fire protection was the most useful discriminator in 1962; expenditure for capital outlay was the most useful discriminator in 1967.

   D. Expenditure for education best discriminated between the established suburb category and the developing suburb category in 1962. In 1967 total general expenditures best discriminated between the two categories with expenditure for hospitals the most useful discriminator among the various functions.

E. General expenditures exclusive of capital outlay best discriminated between the developing suburb category and the small city category in 1962 compared with total general expenditures in 1967. With regard to specific functions, expenditure for education exclusive of capital outlay was the most useful discriminator in 1962, and expenditure for capital outlay was the most useful discriminator in 1967.

F. General expenditures exclusive of capital outlay best discriminated between the small city category and the small town category in both 1962 and 1967. With regard to specific functions, expenditure for education exclusive of capital outlay was the most useful discriminator in 1962 while expenditure for capital outlay was the most useful discriminator in 1967.

5. With regard to the univariate F ratios, no variable consistently displayed a statistically significant variation between the categories compared.

6. With regard to the step-down F ratios, expenditure for fire protection contributed significantly to the variation in each of the comparisons where a significant difference was found in 1967. No variable contributed significantly to the variation in each of the comparisons in which a significant difference was found in 1962.

In summary, marked differences existed with regard to both sources of revenue and purposes of expenditure in only one instance—the comparison of the independent city category and the established suburb category. In two comparisons—the established suburb category with the developing suburb category and the developing suburb category with the small city category—the difference which existed between the categories was insignificant with regard to both sources of revenue and purposes of expenditure. In the remaining comparisons, we noted rather substantial differences between the categories with regard to either sources of revenue or purposes of expenditure. Differences with regard to sources of revenue declined between 1962 and 1967. Differences with regard to purposes of expenditure tended to increase in the three large city categories and to remain relatively constant or decline slightly in the other categories. No source of revenue or purpose of expenditure was identified which consistently exhibited a significant variation between the categories compared. However, expenditure for fire protection did contribute significantly to the variation in all comparisons in which there existed a statistically significant difference between the categories compared.

Findings and Conclusions: Revenue and Expenditure of Counties

The configuration of factors yielded by the four factor analysis procedures did not reveal a more parsimonious taxonomy for categorizing counties. In no instance did a factor matrix account for more than about two-thirds of the total variance associated with the array of variables.

TABLE 8.6

SUMMARY OF THE RESULTS OF THE ANALYSES OF DATA CONCERNING SOURCES OF REVENUE OF COUNTIES

	p of Multi-variate F		Univariate F of p ≦ .01		Step-down F of p ≦ .01		Best Discriminator	
Comparison	1962	1967	1962	1967	1962	1967	1962	1967
A vs. B	.624	.298	None	None	None	None	Other governmental sources	Other governmental sources
B vs. C	.518	.146	None	None	None	None	Other governmental sources	Other governmental sources
C vs. D	.689	.605	None	None	None	None	County taxes	County taxes
D vs. E	.351	.598	None	None	None	None	Other local sources	County taxes
E vs. F	.065	.396	None	None	None	None	Other local sources	Other local sources
F vs. G	.292	.245	None	None	None	None	County taxes	Other governmental sources

In Table 8.6 are summarized the results obtained from the analyses of data concerning the sources of revenue of counties. Based on the results summarized in Table 8.6 and the detailed analyses presented in Chapter V, and subject to the limitations noted earlier in this chapter, the following conclusions are drawn.

1. No difference existed between counties associated with major urban core cities and counties associated with minor urban core cities in either 1962 or 1967.

2. No difference existed between counties associated with minor urban core cities and counties associated with independent cities in either 1962 or 1967.

3. No difference existed between counties associated with independent cities and counties associated with established suburbs in either 1962 or 1967.

4. No difference existed between counties associated with established suburbs and counties associated with developing suburbs in either 1962 or 1967.

5. No difference existed between counties associated with developing suburbs and counties associated with small cities in either 1962 or 1967.

6. No difference existed between counties associated with small cities and counties associated with small towns in either 1962 or 1967.

7. A difference statistically significant at the .0001 level existed in both 1962 and 1967 when all sources of variation were combined. Thus, significant differences apparently did exist among categories which were not compared.

In Table 8.7 are summarized the results obtained from the analyses of data concerning the purposes of expenditure by the counties most closely associated with the school districts in the sample. Based on the results summarized in Table 8.7 and the detailed analyses discussed in Chapter V, and subject to the limitations which have been noted, the following conclusions are drawn.

1. No difference existed between counties associated with major urban core cities and counties associated with minor urban core cities in either 1962 or 1967.

2. When all remaining sources of variation were combined, a difference statistically significant at the .0001 level was obtained in both 1962 and 1967.

3. When the restriction with regard to further analysis after rejection of an hypothesis was relaxed and all planned comparisons were completed, it was concluded that:

TABLE 8.7

SUMMARY OF THE RESULTS OF THE ANALYSES OF DATA CONCERNING PURPOSES OF EXPENDITURE OF COUNTIES

	p of multi-variate F		Univariate F of $p \leq .01$		Step-down F of $p \leq .01$		Best Discriminator	
Comparison	1962	1967	1962	1967	1962	1967	1962	1967
A vs. B	.865	.847	None	None	None	None	Total general expenditure	Interest
All Remaining Sources	<.0001	<.0001	Highways ..... .0001 Long t. debt. .0001	All variables except interest on debt	Highways ..... .0001 Parks, etc. .... .002 Gen. con. ..... .0007 Long t. debt. .0005	T. gen. exp. .. .0001 Cap. out. ..... .0001 Highways ..... .0001 Health ..... .0001 Police ..... .0001 Fin. admin. .. .001 Gen. con. ..... .0001 Unalloc. ..... .001		
*B vs. C	.030	.013	Highways ..... .002	Highways ..... .002	None	Interest ..... .004	Highways	Highways
*C vs. D	.203	.067	None	None	Parks, etc. .... .01	None	Total general expenditure	General expen. less cap. outlay
*D vs. E	.137	.131	Long t. debt. .0008	Parks, etc. .... .003 Long t. debt. .004	None	None	Gen. control	Education less capital outlay
*E vs. F	<.0001	<.0001	Highways ..... .0001 Health ..... .004 Unalloc. ..... .004 Long t. debt. .0001	Highways ..... .0001 Health ..... .0006 Parks, etc. .... .006 Unalloc. ..... .0003 Long t. debt. .0001	Highways ..... .0001 Gen. con. ..... .0004 Long t. debt. .0002	Highways ..... .0001 Parks, etc. .... .009 Gen. con. ..... .0004	Long term debt	Highways
*F vs. G	.358	.282	None	Highways ..... .007	None	Highways ..... .007	General control	Highways

*Comparison completed after rejection of null hypothesis

A. A difference statistically significant at the .05 level existed between counties associated with minor urban core cities and counties associated with independent cities in both 1962 and 1967.

B. No difference existed between counties associated with independent cities and counties associated with established suburbs in either 1962 or 1967.

C. No difference existed between counties associated with established suburbs and counties associated with developing suburbs in either 1962 or 1967.

D. A difference statistically significant at the .0001 level existed between counties associated with developing suburbs and counties associated with small cities in both 1962 and 1967.

E. No difference existed between counties associated with small cities and counties associated with small towns in either 1962 or 1967.

3. With regard to which purposes of expenditure best discriminated between categories. it was concluded that in the comparisons where a significant difference existed between the categories compared:

   A. Expenditure for highways best discriminated between counties associated with minor urban core cities and counties associated with independent cities in both 1962 and 1967.

   B. Long term debt best discriminated between counties associated with developing suburbs and counties associated with small cities in 1962. In 1967 expenditure for highways best discriminated between these two categories.

4. With regard to the univariate F ratios, expenditure for highways was the variable which most frequently exhibited significant variance between the categories compared.

5. With regard to the step-down F ratios, expenditure for highways was a major contributor to the variation between the categories in those comparisons in which a significant difference was found.

In summary, no difference existed with regard to the sources of revenue of any of the categories compared. With regard to purposes of expenditure, a significant difference between categories existed only in the comparisons involving the minor urban core city and independent city categories and the developing suburb and small city categories. It is worth noting that these two comparisons involved counties situated in a standard metropolitan statistical area and counties not situated in such an area. Expenditure for highways was consistently identified as a function in which substantial variation existed between the categories compared.

Findings and Conclusions: Combined Data for School Districts, Municipalities and Counties

In this section are summarized the results obtained from the analyses of combined data regarding sources of revenue and purposes of expenditure of three major units of local government. Thus, these data provide a virtually complete picture of the overall sources of revenue and purposes of expenditure of the major units of local government—school districts, municipalities and counties.

In Table 8.8 are summarized the results obtained from the analyses of data concerning the combined sources of revenue of school districts, municipalities and counties. On the basis of the results summarized in Table 8.8 and the detailed analyses presented in Chapter VI, and subject to the limitations noted at the outset of this chapter, the following conclusions are drawn.

1. The difference between the major urban core city category and the minor urban core city category declined between 1962 and 1967. In 1962 the difference between the two categories was statistically significant at the .001 level. In 1967 the difference between these two categories was significant at the .01 level.

2. No difference existed between the established suburb category and the developing suburb category in either 1962 or 1967.

3. The difference between the small city category and the small town category declined between 1962 and 1967. In 1962 the difference between the two categories was statistically significant at the .001 level. In 1967 the difference between the two categories was significant only at the .05 level.

4. When all remaining sources of variation were combined, a difference statistically significant at the .0001 level existed in both 1962 and 1967.

5. When the restriction with regard to further analysis after rejection of an hypothesis was relaxed and all planned comparisons were completed, it was concluded that:

   A. A difference statistically significant at the .01 level existed between the minor urban core city category and the independent city category in both 1962 and 1967.

   B. A difference statistically significant at the .01 level existed between the independent city category and the established suburb category in both 1962 and 1967.

   C. The difference between the developing suburb category and the small city category increased between 1962 and 1967. In 1962 the difference between these two categories was statistically significant at the .01 level; in 1967 the difference was statistically significant at the .0001 level.

TABLE 8.8

SUMMARY OF THE RESULTS OF THE ANALYSES OF DATA CONCERNING THE COMBINED SOURCES OF REVENUE OF SCHOOL DISTRICTS AND THE MUNICIPALITIES AND COUNTIES MOST CLOSELY ASSOCIATED WITH THE SCHOOL DISTRICTS

	p of Multivariate F		Univariate F of p ≤ .01		Step-down F of p ≤ .01		Best Discriminator	
Comparison	1962	1967	1962	1967	1962	1967	1962	1967
A vs. B	.0002	.004	Other local taxes..... .0001	Other local taxes ..... .0003	Other local taxes ..... .0001	Other local taxes..... .0002	Other local taxes	Other local taxes
D vs. E	.245	.221	None	None	None	None	Other local sources	Other governmental sources
F vs. G	.0006	.041	State..... .0002 Utilities.. .0009	State..... .002	State..... .0002 Utilities.. .004	State..... .002	State sources	State sources
All Remaining sources	<.0001	.0001	State..... .0001 O.loc.tax .0005 O.loc.sor. .0001 Utilities.. .003	State..... .0001 O.loc.tax. .001 O.loc.sor. .0001 Utilities.. .005	State..... .0001 Prop. tax .006 O.loc.tax .001 O.loc.sor. .003	State..... .0001 O.loc.tax .0002 O.loc.sor. .005		
*B vs C	.004	.003	State..... .0002	State..... .0004	State..... .0002	State..... .0004	State sources	State sources
*C vs. D	.002	.003	Other local sources... .0002	Other local sources... .0001	Other local sources... .002	Other local sources... .0005	Other local sources	Other local sources
*E vs. F	.003	<.0001	State..... .0003 Prop. tax .004	State..... .0001 Prop. tax .001	State..... .0003	State..... .0001	State sources	State sources

*Comparison completed after rejection of null hypothesis

6. With regard to which sources of revenue best discriminated between the categories compared, it was concluded that:

   A. Revenue from other local taxes best discriminated between the major urban core city category and the minor urban city category in both 1962 and 1967.

   B. Revenue from other local sources best discriminated between the established suburb category and the developing suburb category in 1962. In 1967 revenue from other governmental sources best discriminated between these two categories.

   C. Revenue from state sources best discriminated between the small city category and the small town category in both 1962 and 1967.

   D. Revenue from state sources best discriminated between the minor urban core city category and the independent city category in both 1962 and 1967.

   E. Revenue from other local sources best discriminated between the independent city category and the established suburb category in both 1962 and 1967.

   F. Revenue from state sources best discriminated between the developing suburb category and the small city category in both 1962 and 1967.

7. With regard to the univariate F ratios, revenue from state sources exhibited significant variation between the categories compared in three of the six comparisons in both 1962 and 1967.

8. With regard to the step-down F ratios, revenue from state sources was a major contributor to the significant variation in three of the five comparisons in which a significant difference was found.

9. Revenue from property taxes exhibited a significant variation between the categories compared in only one instance (E vs. F) and was not the major contributor to the variation in any comparisons in which a significant difference existed between the categories compared.

In Table 8.9 are summarized the results obtained from analyses of data concerning the combined purposes of expenditure of school districts, municipalities and counties. On the basis of the results summarized in Table 8.9 and the detailed analyses reported in Chapter VI, and subject to the limitations which have been identified, the following conclusions are drawn.

1. No statistically significant difference existed between the major urban core city category and the minor urban core city category in either 1962 or 1967.

TABLE 8.9

SUMMARY OF THE RESULTS OF THE ANALYSES OF DATA CONCERNING THE COMBINED PURPOSES OF EXPENDITURE OF SCHOOL DISTRICTS AND THE MUNICIPALITIES AND COUNTIES MOST CLOSELY ASSOCIATED WITH THE SCHOOL DISTRICTS

	p of Multivariate F		Univariate F of p ≦ .01		Step-down F of p ≦ .01		Best Discriminator	
Comparison	1962	1967	1962	1967	1962	1967	1962	1967
A vs. B	.738	.196	None	Police..... .01	None	None	Police	Police
D vs. E	.012		Education.. .0001		Education.. .0001		Education	
			Education.. .0001		Education.. .0001			
			Highways... .0001	Education.. .0001	Highways... .0001			
			Police..... .008	Highways... .0001	Police..... .001	Education.. .0001		
			Fire..... .0001	Fire..... .0001	Fire..... .0001	Highways... .0001		
			Sanita. ..... .0001	Parks, etc. . .001	Sanita. ..... .002	Health..... .0001		
			Parks, etc. . .002	Libraries.... .003	Parks, etc. . .001	Police..... .001		
All Remaining Sources	<.0001	<.0001	Libraries.... .001	Gen. con. .. .009	Libraries.... .0004	Fire..... .0001		
			Cap. out. ... .0001	Cap. out. ... .002	Cap. out. ... .008	Parks, etc. . .002		
						Education.. .0001		
				Education.. .0001		Highways... .002		
			Education.. .0002	Highways... .0001	Education.... .002	Welfare ..... .002		
			Highways... .0001	Police..... .002	Highways... .0001	Health..... .0001		
			Police..... .0007	Fire..... .0001	Police..... .0001	Police..... .0001		
			Fire..... .0001	Parks, etc. . .0003	Fire..... .0001	Fire..... .0001		
			Sanita. ..... .0001	Housing..... .004	Sanita. ..... .0003	Parks, etc. . .0009		
			Parks, etc. . .004	Gen. con. .. .007	Parks, etc. . .001	Gen. con. .. .008	Fire	Fire
*B vs. C	<.0001	<.0001	Cap. out. ... .0002	Interest..... .004	Libraries.... .009	Interest..... .002		
					Education.... .003			
			Education.... .003		Hospitals.... .004			
			Hospitals..... .005	Education.. .0001	Fire..... .0001			
			Fire..... .0001	Fire..... .0001	Parks, etc. . .002	Education.. .0001		
			Libraries.... .001	Libraries.... .003	Libraries.... .0002	Health..... .0001	Fire	Fire
*C vs. D	<.0001	<.0001	Cap. out. ... .0001	Cap. out. ... .0002	Cap. out. ... .002	Fire..... .0001		
						Education.. .0001		
*D vs. E		<.0001		Education.. .0001		Fin. adm. .. .004		Education

TABLE 8.9 (cont.)

	P of Multi-variate F		Univariate F of p ≦ .01		Step-down F of p ≦ .01		Best Discriminator	
Comparison	1962	1967	1962	1967	1962	1967	1962	1967
*E vs. F	<.0001	<.0001	Education.. .0001 Highways... .006	Education.. .0001 Highways... .0007 Unallo. ..... .007 Utilities..... .007	Education.. .0001 Highways... .0008	Education.. .0001 Highways... .0001	Education	Education
*F vs. G	<.0001	<.0001	Housing ..... .006 Cap. out. ... .0004	Education.. .001 Highways... .007	Fire..... .01 Libraries.... .009	Education.. .001 Fire..... .0007	Police	Fire

*Comparison completed after rejection of null hypothesis

2. When all remaining sources of variation were combined, a difference statistically significant at the .0001 level existed in both 1962 and 1967.

3. When the restriction with regard to further analysis after rejection of an hypothesis was relaxed and all planned comparisons were completed, it was concluded that:

   A. A difference statistically significant at the .0001 level existed between the minor urban core category and the independent city category in both 1962 and 1967.

   B. A difference statistically significant at the .0001 level existed between the independent city category and the established suburb category in both 1962 and 1967.

   C. The difference between the established suburb category and the developing suburb category increased between 1962 and 1967. In 1962 the difference between these two categories was statistically significant at the .05 level; in 1967 the difference between the two categories was statistically significant at the .0001 level.

   D. A difference statistically significant at the .0001 level existed between the developing suburb category and the small city category in both 1962 and 1967.

   E. A difference statistically significant at beyond the .0001 level existed between the small city category and the small town category in both 1962 and 1967.

4. With regard to which purposes of expenditure best discriminated between the categories compared, it was concluded that:

   A. Expenditure for police protection best discriminated between the major urban core city category and the minor urban core city category in both 1962 and 1967.

   B. Expenditure for fire protection best discriminated between the minor urban core city category and the independent city category in both 1962 and 1967.

   C. Expenditure for fire protection best discriminated between the independent city category and the established suburb category in both 1962 and 1967.

   D. Expenditure for education best discriminated between the established suburb category and the developing suburb category in both 1962 and 1967.

E. Expenditure for education best discriminated between the developing suburb category and the small city category in both 1962 and 1967.

F. Expenditure for police protection best discriminated between the small city category and the small town category in 1962. In 1967 expenditure for fire protection best discriminated between these two categories.

5. With regard to the univariate F ratios, expenditure for education differed significantly between the categories compared in four of the six comparisons in 1962 and in five of the six comparisons in 1967. Expenditure for highways differed significantly between the categories compared in two of the six comparisons in 1962 and in three of the six comparisons in 1967.

6. With regard to the step-down F ratios, expenditure for education was a major contributor to the variation in four of the five comparisons in which a statistically significant difference was found in 1962, and in all five of the comparisons in which a statistically significant difference was found in 1967. Expenditure for fire protection was a major contributor to the variation in three of the five comparisons in which a statistically significant difference was found in both 1962 and 1967.

In summary, the comparison of the established suburb category with the developing suburb category was the only one of the six in which the difference between the categories compared with regard to sources of revenue was not statistically significant at beyond the .05 level. However, in only one comparison (E vs. F, 1967) was the difference between the categories significant at the .0001 level. Revenue from state sources was the variable which most frequently contributed to the variation between the categories compared and also was the best discriminator between categories more frequently than any other variable. With regard to purposes of expenditure, marked differences existed between the categories compared with the exception of the major urban core city category and the minor urban core city category, where the difference between the two categories was not statistically significant. Expenditure for education was a major contributor to the significant variation between categories more frequently than was any other variable. Expenditure for fire protection best discriminated between the categories more frequently than did any other variable.

Implications for Financing Education

Many implications relative to the financing of education (and other services provided by units of local government) could be drawn from the results of this study. We do not purport to have identified all of the implications which may be drawn from the study, or even the most important implications, for in such matters importance, like beauty, is to a large degree in the eye of the beholder. That is, the perception of relative importance is conditioned by one's value orientation rather than by tests of statistical significance. Having expressed this caveat, we believe the following implications are worthy of note.

Fiscal Equity

If measures related to market value of property per pupil in average daily membership are regarded as the criteria for judging fiscal equity in the support of education (as they are in nearly every state support program), one would be tempted to conclude that a fair degree of fiscal equity has been attained. We found no significant variation between the categories of school districts compared in this study with regard to fiscal capacity as measured by the market value of property per pupil in average daily membership. Similarly, the variance in property tax rate between the categories compared was barely significant at the .05 level in 1962 and was not significant in 1967. In both 1962 and 1967 mean property tax rates were strikingly similar in all categories except the established suburb and the developing suburb, where they were about two mills higher than in the next highest category. Revenue from property taxes per pupil in average daily membership was not a major contributor to the variation between the categories of school districts compared except in the comparison of school districts in the developing suburb category with school districts in the small city category. Revenue from property taxes per capita varied significantly between the categories of municipalities compared only in the comparison of the independent city category with the established suburb category. When all sources of revenue of school districts, municipalities and counties were combined, revenue from property taxes varied significantly between categories only in the comparisor of the developing suburb category with the small city category. Thus, we did not identify extraordinary fiscal inequities between the categories we compared *if* market value of property, property tax rates, or revenue from property taxes are used as the criteria for determining whether or not fiscal equity has been attained.

If, however, indices of consumption and income (such as retail sales and effective buying income) are applied as the criteria for judging fiscal equity, then marked differences existed between several of the categories compared in the study with regard to both the fiscal capacity and the sources of revenue of school districts, municipalities and counties. Effective buying income, expressed on either per capita or per household bases, was the major source of variation between the school district categories compared with regard to fiscal capacity. Retail sales per capita also was an important source of variation between categories in several instances. Revenue from state sources was a major contributor to the variation between school district categories compared with regard to sources of revenue, and to the variation between categories in the analyses based on the combined sources of revenue of school districts, municipalities and counties.

The implication is clear that, if greater fiscal equity relative to the income and consumption components of fiscal capacity is desired, it must be achieved through the use of direct taxes on these fiscal bases, for we demonstrated that no correlation existed between the market value of property per pupil in average daily membership and retail sales and effective buying income per capita in either 1962 or 1967. Our data also strongly imply that taxes on income and consumption can effectively be levied only by the largest units of local

government. It will be recalled that revenue from other local taxes varied significantly only in the comparison involving the major urban core city category and the minor urban core city category. The mean revenue per capita from other local taxes was much higher in the major urban core city category than it was in all other categories in both 1962 and 1967—for school districts, for municipalities, and for school districts, municipalities and counties combined.

In a study developed in conjunction with this project, Bruss[1] demonstrated clearly that it is possible to achieve greater fiscal equity for the taxpayers in a county if all school districts within that county are considered as one fiscal unit for taxing purposes. The results of Bruss' study, which included only Wisconsin school districts, also showed that each of the counties he studied possessed unique fiscal characteristics, thus suggesting that even greater fiscal equity might be achieved if taxing units larger than a county were utilized, e.g., regional taxing authorities or the state.

The results of our study clearly indicated that fiscal capacity as measured by the market value of property was not a major source of variation among the categories of school districts we studied, but that fiscal capacity as measured by effective buying income was a major source of variation among the categories. It seems clear that greater fiscal equity cannot be achieved through taxes levied by units of local government; it can be achieved only through taxes levied by larger taxing units such as the state or federal government. Thus, further significant progress toward fiscal equity will be achieved only through programs for financing education which utilize the taxing powers of the states and the federal government to tap those components of fiscal capacity which units of local government cannot tap effectively, and which redistribute the revenue derived from such taxes in direct proportion to the fiscal needs of school districts and other units of local government.

Revenue and Expenditure of Units of Local Government

Wide differences of opinion exist with regard to how the demand (need) for the services provided by units of local government should be measured. We do not propose to resolve this question. We do, however, maintain that the existing level of expenditure per capita provides a relatively precise calculus of the priority assigned the provision of various public services, even if it does not represent an accurate measure of the absolute demand (or even the perceived demand) for such services. The expenditure per capita for various governmental functions may be considered to represent the consensus of the voters in a political unit with regard to the priority which should be assigned each function as reflected in the share of the limited fiscal resources of the political unit allocated to each function. Thus, an examination of the resources allocated to each governmental function by the various units of local government provides some insight regarding the priority attached to a given function.

As shown by the analyses reported in Chapter VI, education was assigned the highest priority of any function in each of the seven categories we studied, and was accorded an extremely high priority in the two suburb categories. The expenditure per capita for education varied considerably between categories and contributed significantly to the variation between the categories compared more frequently than did any other variable. Certain functions—among them police

protection, fire protection, sanitation (other than sewerage), and housing and urban renewal—were assigned a higher priority in the two urban core city categories than in the other five categories. Expenditure for highways, on the other hand, was assigned a lower priority in the two urban core city categories than in the other five categories. A number of functions (e.g., sewerage, financial administration, and general control), were assigned about the same priority in each category, at least as judged by expenditure per capita for the function. Welfare was by no means an urban core city phenomenon—expenditure per capita for public welfare in the small town category exceeded that in the major and minor urban core city categories in both 1962 and 1967.

With regard to sources of revenue, the favored status of the suburban and small town categories with regard to revenue from state sources was evident in the analyses of the combined revenues of units of local government and was striking in the analyses of the revenue sources of school districts. This situation is undoubtedly the result of many factors—the reliance on property value as an index of fiscal capacity in existing state support programs, the relatively high ratio of school age children to total population in the suburbs, the lack of industrial and mercantile property in the tax base of suburbs and small towns, and the alleged dominance of state legislatures by rural legislators and more recently by a coalition of rural and suburban legislators, to name only a few.

At the same time, it should be noted that the suburbs are not enclaves where low property tax rates universally prevail. Revenue from property taxes was as high or higher in the two suburb categories as it was in any other category on both per pupil in average daily membership and per capita bases. However, the relative burden of the property tax undoubtedly was somewhat lighter in the two suburb categories, where effective buying income, i.e., income after taxes, was higher than in any of the other five categories on both per capita and per household bases.

The priority assigned to the various components which comprise the total expenditures for education by school districts in each of the seven categories can be ascertained from the data presented in Chapter III. Expenditure for instruction was by far the most important component in each of the seven categories and was largest in the two suburb categories. However, expenditure for instruction varied significantly between categories *only* when the independent city category was compared with the established suburb category and when the developing suburb category was compared with the small city category. Expenditure for instruction was not a major contributor to the variation between the categories compared.

Expenditure for transportation was a major source of variation between the categories compared and was much higher in the suburb and small town categories than in the other four categories. Expenditure for capital outlay and expenditure for debt service were, as expected, substantially higher in the two suburb categories than in the other five categories. Expenditure for administration and expenditure for fixed charges (i.e., fringe benefits) also were substantially higher in the two suburb categories than in the other five categories.

The picture which emerges, then, is one in which school districts serving established suburbs and developing suburbs spend substantially more for

instruction (which is reflected in a lower ratio of pupils per professional staff member), provide considerably more attractive fringe benefits for their teachers, spend somewhat more for administration, and spend substantially more to transport pupils. Their advantageous position with regard to the level of spending for education is made possible by a willingness to accept a relatively high level of property taxes for education, by generous financial support from the state, and by assigning a relatively low priority to many of the other services provided by units of local government.

Our findings provide some notion of the relative priority assigned by the electorate to various public services. If one assumes that the priority assigned various public services (as reflected by the resources allocated to that service) bears some relationship to the true demand (need) for each service, there is a clear implication that the ability of units of local government to finance an adequate and appropriate level of public services must be considered if fiscal equity is to be achieved. Thus, the burden placed upon a tax base by other units of local government must be considered in any plan for financing education which purports to value fiscal equity.

Categorization of School Districts, Municipalities, and Counties

The taxonomy we employed to categorize units of local government was based primarily upon the results of previous research tempered by our knowledge with regard to the availability of the data which were required. The taxonomy was useful, and the results of the factor analyses we performed certainly did not reveal a more useful taxonomy within which this universe might be categorized.

With regard to school districts, our results implied that the major urban core city category and the minor urban core city category could be combined. We are willing to concede, however, that the largest cities may defy categorization, i.e., they may be virtually unique entities which require unique treatment. Indeed, most of the large cities now are dealt with as unique entities by the state. We also are willing to concede that our categorization of suburbs may be oversimplified. The results of previous research indicated that an advantage could be gained by distinguishing between high income residential suburbs and low income residential suburbs. The results of our analyses indicated that, with regard to sources of revenue, the two suburb categories we employed could be combined, but that they exhibited a significant difference with regard to the purposes of expenditure.

With regard to municipalities, it would appear that the two suburb categories could be combined, but that significant differences existed between the other categories compared. With regard to counties we believe that three categories would suffice: (1) counties in standard metropolitan statistical areas, (2) counties associated with cities with populations of 25,000-74,999, and (3) all other counties.

It may be argued that centralizing all local functions on a county or regional basis would eliminate the need for categorizing school districts and municipalities. However, we are unwilling to accept centralization as a panacea, for we see little evidence that the quality of decisions made by central units of government is superior to those made by local units of government. We prefer to maintain a

viable system of units of local government which are more likely to sense and respond quickly to the needs of their constituents. From this value orientation, therefore, we believe that a taxonomy which accurately reflects real differences in fiscal capacity and public demands (needs) is essential to the attainment of fiscal equity in the provision of education as well as other public services.

FOOTNOTES

1. Lyle R. Bruss, "An Analysis of Relationships Between Fiscal Capacity and Tax Effort in School Districts and Hypothetical Regional Taxing Agencies in Wisconsin," (unpublished Ph.D. dissertation, The University of Wisconsin, 1970).

APPENDIX A

SCHOOL DISTRICTS INCLUDED IN EACH SAMPLE CATEGORY

Category A—Major Urban Core City

School District	City of Superintendent	County	State
1. Dade County	Miami	Dade	Florida
2. Hillsborough County	Tampa	Hillsborough	Florida
3. Louisville City	Louisville	Jefferson	Kentucky
4. Buffalo	Buffalo	Erie	New York
5. New York City	Brooklyn	Kings	New York
6. Rochester	Rochester	Monroe	New York
7. Portland	Portland	Multnomah	Oregon
8. Dallas	Dallas	Dallas	Texas
9. El Paso	El Paso	El Paso	Texas
10. Fort Worth	Fort Worth	Tarrant	Texas
11. Houston	Houston	Harris	Texas
12. San Antonio	San Antonio	Bexar	Texas
13. Milwaukee	Milwaukee	Milwaukee	Wisconsin

Category B—Minor Urban Core City

School District	City of Superintendent	County	State
1. Duval County	Jacksonville	Duval	Florida
2. Escambia County	Pensicola	Escambia	Florida
3. Orange County	Orlando	Orange	Florida
4. Pinellas County	St. Petersburg	Pinellas	Florida
5. Covington City	Covington	Kenton	Kentucky
6. Fayette County	Lexington	Fayette	Kentucky
7. Binghamton	Binghamton	Broome	New York
8. Niagara Falls	Niagara Falls	Niagara	New York
9. Schenectady	Schenectady	Schenectady	New York
10. Syracuse	Syracuse	Onondaga	New York
11. Troy	Troy	Rensselaer	New York
12. Utica	Utica	Oneida	New York
13. Fargo	Fargo	Cass	North Dakota
14. Eugene	Eugene	Lane	Oregon
15. Abilene	Abilene	Taylor	Texas
16. Beaumont	Beaumont	Jefferson	Texas
17. Brownsville	Brownsville	Cameron	Texas
18. Corpus Christi	Corpus Christi	Nueces	Texas
19. Denison	Denison	Grayson	Texas
20. Ector (Odessa)	Odessa	Ector	Texas
21. Galveston	Galveston	Galveston	Texas
22. Harlingen	Harlingen	Cameron	Texas
23. Lubbock	Lubbock	Lubbock	Texas
24. Orange	Orange	Orange	Texas
25. Pharr-San Juan-Alamo	Pharr	Hidalgo	Texas
26. Port Arthur	Port Arthur	Jefferson	Texas
27. San Angelo	San Angelo	Tom Green	Texas
28. Sherman	Sherman	Grayson	Texas

Category B—Minor Urban Core City (Continued)

School District	City of Superintendent	County	State
29. Texarkana	Texarkana	Bowie	Texas
30. Texas City	Texas City	Galveston	Texas
31. Provo City	Provo	Utah	Utah
32. Salt Lake City	Salt Lake City	Salt Lake	Utah
33. Kenosha	Kenosha	Kenosha	Wisconsin
34. Racine	Racine	Racine	Wisconsin
35. Superior	Superior	Douglas	Wisconsin

Category C—Independent City

School District	City of Superintendent	County	States
1. Alachua County	Gainesville	Alachua	Florida
2. Monroe County	Key West	Monroe	Florida
3. Polk County	Lakeland	Polk	Florida
4. Sarasota County	Sarasota	Sarasota	Florida
5. St. Lucie County	Ft. Pierce	St. Lucie	Florida
6. Volusia County	Daytona Beach	Volusia	Florida
7. Bowling Green City	Bowling Green	Warren	Kentucky
8. Owensboro City	Owensboro	Davis	Kentucky
9. Paducah City	Paducah	McCracken	Kentucky
10. Richmond City	Richmond	Madison	Kentucky
11. Amersterdam	Amersterdam	Montgomery	New York
12. Auburn	Auburn	Cayuga	New York
13. Ithaca	Ithaca	Tompkins	New York
14. Jamestown	Jamestown	Chautauqua	New York
15. Kingston	Kingston	Ulster	New York
16. Newburgh	Newburgh	Orange	New York
17. Poughkeepsie	Poughkeepsie	Dutchess	New York
18. Watertown	Watertown	Jefferson	New York
19. Bismarck	Bismarck	Burleigh	North Dakota
10. Grand Forks	Grand Forks	Grand Forks	North Dakota
21. Minot	Minot	Ward	North Dakota
22. Bryan	Bryan	Brazos	Texas
23. Kingsville	Kingsville	Kleberg	Texas
24. Longview	Longview	Gregg	Texas
25. Temple	Temple	Bell	Texas
26. Victoria	Victoria	Victoria	Texas
27. Beloit	Beloit	Rock	Wisconsin
28. Eau Claire	Eau Claire	Eau Claire	Wisconsin
29. Fond du Lac	Fond du Lac	Fond du Lac	Wisconsin
30. Janesville	Janesville	Rock	Wisconsin
31. La Crosse	La Crosse	La Crosse	Wisconsin
32. Manitowoc	Manitowoc	Manitowoc	Wisconsin
33. Oshkosh	Oshkosh	Winnebago	Wisconsin
34. Sheboygan	Sheboygan	Sheboygan	Wisconsin
35. Wausau	Wausau	Marathon	Wisconsin

Category D—Established Suburb

School District	City of Superintendent	County	State
1. Bethlehem	Delmar	Albany	New York
2. Burnt Hills	Scotia	Saratoga	New York
3. Cherry Rd.-Onon Hill	Syracuse	Onondaga	New York
4. Cleveland Hill	Cheektowaga	Erie	New York

Category D—Established Suburb (Continued)

School District	City of Superintendent	County	State
5. Clinton	Clinton	Oneida	New York
6. Copiague	Copiague	Suffolk	New York
7. Eden	Eden	Erie	New York
8. Frontier	Hamburg	Erie	New York
9. Glen Cove	Glen Cove	Nassau	New York
10. Harrison	Harrison	Westchester	New York
11. Hastings-on-Hudson	Hastings-on-Hudson	Westchester	New York
12. Herkimer	Herkimer	Herkimer	New York
13. Ilion	Ilion	Herkimer	New York
14. Levittown	Levittown	Nassau	New York
15. Lindenhurst	Lindenhurst	Suffolk	New York
16. Mohonasen	Schenectady	Schenectady	New York
17. Nyack	Nyack	Rockland	New York
18. Seaford	Seaford	Nassau	New York
19. Susquehana Valley	Conklin	Broome	New York
20. Whitney Point	Whitney Point	Broome	New York
21. Fern Ridge	Veneta	Lane	Oregon
22. South Lane	Cottage Grove	Lane	Oregon
23. Angelton	Angelton	Brazoria	Texas
24. Azle	Azle	Tarrant	Texas
25. Birdville	Fort Worth	Tarrant	Texas
26. Denton	Denton	Denton	Texas
27. Flour Bluff	Corpus Christi	Nueces	Texas
28. Fort Bend	Stafford	Fort Bend	Texas
29. Lamar	Rosenberg	Fort Bend	Texas
30. Liberty	Liberty	Liberty	Texas
31. South Park	Beaumont	Jefferson	Texas
32. DePere	DePere	Brown	Wisconsin
33. Shorewood	Shorewood	Milwaukee	Wisconsin
34. South Milwaukee	South Milwaukee	Milwaukee	Wisconsin
35. Waukesha	Waukesha	Waukesha	Wisconsin

Category E—Developing Suburb

School District	City of Superintendent	County	State
1. Alden	Alden	Erie	New York
2. Averill Park	Averill Park	Rensselaer	New York
3. Brittonkill	Troy	Rensselaer	New York
4. Greenburgh	Hartsdale	Westchester	New York
5. Half Hollow Hills	Huntington Station	Suffolk	New York
6. Lancaster	Lancaster	Erie	New York
7. Locust Valley	Locust Valley	Nassau	New York
8. Manlius	Manlius	Onondaga	New York
9. North Colonie	Newtonville	Albany	New York
10. North Rose-Wolcott	Wolcott	Wayne	New York
11. Orchard Park	Orchard Park	Erie	New York
12. Ossining	Ossining	Westchester	New York
13. Pearl River	Pearl River	Rockland	New York
14. Sloan	Sloan	Erie	New York
15. Smithtown	St. James	Suffolk	New York
16. South Orangetown	Orangeburg	Rockland	New York
17. Sweet Home	Buffalo	Erie	New York
18. Webster	Webster	Monroe	New York
19. Williamson	Williamson	Wayne	New York
20. Yorktown Heights	Yorktown Heights	Westchester	New York
21. Woodburn	Woodburn	Marion	Oregon

Category E—Developing Suburb (Continued)

22. Aldine	Houston	Harris	Texas
23. Canyon	Canyon	Randall	Texas
24. East Central	San Antonio	Bexar	Texas
25. Fort Sam Houston	San Antonio	Bexar	Texas
26. Gregory-Portland	Gregory	San Patricio	Texas
27. Klein	Spring	Harris	Texas
28. New Caney	New Caney	Montgomery	Texas
29. Schertz-Cibolo-Univ. City	Schertz	Guadalupe	Texas
20. Sheldon	Houston	Harris	Texas
31. Southwest	San Antonio	Bexar	Texas
32. Granite	Salt Lake City	Salt Lake	Utah
33. Ashwaubenon	Green Bay	Brown	Wisconsin
34. Hamilton	Sussex	Waukesha	Wisconsin
35. Sun Prairie	Sun Prairie	Dane	Wisconsin

Category F—Small City

School District	City of Superintendent	County	State
1. Lake County	Leesburg	Lake	Florida
2. Manatee County	Brandenton	Manatee	Florida
3. Marion County	Ocala	Marion	Florida
4. Franklin County	Frankfort	Franklin	Kentucky
5. Glasgow City	Glasgow	Barren	Kentucky
6. Hopkinsville City	Hopkinsville	Christian	Kentucky

Category F—Small City (continued)

School District	City of Superintendent	County	State
7. Batavia	Batavia	Genesee	New York
8. Cortland	Cortland	Cortland	New York
9. Geneva	Geneva	Ontario	New York
10. Glen Falls	Glens Falls	Warren	New York
11. Massena	Massena	St. Lawrence	New York
12. Middletown	Middletown	Orange	New York
13. Olean	Olean	Cattaraugus	New York
14. Jamestown	Jamestown	Stutsman	North Dakota
15. Astoria	Astoria	Clatsop	Oregon
16. Grants Pass	Grants Pass	Josephine	Oregon
17. Medford	Medford	Jackson	Oregon
18. A & M Cons.	College Station	Brazos	Texas
19. Alice	Alice	Jim Wells	Texas
20. Corsicana	Corsicana	Navarro	Texas
21. Gainesville	Gainesville	Cooke	Texas
22. Huntsville	Huntsville	Walker	Texas
23. Killeen	Killeen	Bell	Texas
24. Marshall	Marshall	Harrison	Texas
25. Mineral Wells	Mineral Wells	Palo Pinto	Texas
26. Pampa	Pampa	Gray	Texas
27. Pecos	Pecos	Reeves	Texas
28. San Marcos	San Marcos	Hays	Texas
29. Sweetwater	Sweetwater	Nolan	Texas
30. Uvalde	Uvalde	Uvalde	Texas
31. Box Elder County	Brigham City	Box Elder	Utah
32. Chippewa Falls	Chippewa Falls	Chippewa	Wisconsin
33. Kaukauna	Kaukauna	Dodge	Wisconsin
34. Neenah	Neenah	Winnebago	Wisconsin
35. Wisconsin Rapids	Wisconsin Rapids	Wood	Wisconsin

Category G—Small Town or Agricultural Service Center

School District	City of Superintendent	County	State
1. Clay County	Green Cove Spring	Clay	Florida
2. Jackson County	Chatahoochee	Jackson	Florida
3. Madison County	Madison	Madison	Florida
4. Boyle County	Danville	Boyle	Kentucky
5. Carroll County	Carrollton	Carroll	Kentucky
6. Corbin City	Corbin	Whitley	Kentucky
7. Grayson County	Leitchfield	Grayson	Kentucky
8. Livingston County	Smithland	Livingston	Kentucky
9. McLean County	Calhoun	McLean	Kentucky
10. Addison	Addison	Steuben	New York
11. Attica	Attica	Wyoming	New York
12. Canastota	Canastota	Madison	New York
13. Catskill	Catskill	Greene	New York
14. Granville	Granville	Washington	New York
15. Homer	Homer	Cortland	New York
16. Monroe-Woodbury	Monroe	Orange	New York
17. Montgomery	Montgomery	Orange	New York
18. Penn Yan	Penn Yan	Yates	New York
19. St. Lawrence	Brasher Falls	St. Lawrence	New York
20. Valley City	Valley City	Barnes	North Dakota
21. Coos Bay	Coos Bay	Coos	Oregon
22. Coquille	Coquille	Coos	Oregon
23. McMinnville	McMinnville	Yamhill	Oregon
24. Center	Center	Shelby	Texas
25. Fort Stockton	Fort Stockton	Pecos	Texas
26. Lampasas	Lampasas	Lampasas	Texas
27. Marlin	Marlin	Falls	Texas
28. Mt. Pleasant	Mt. Pleasant	Titus	Texas
29. Muleshoe	Muleshoe	Bailey	Texas
30. Rice Consolidated	Eagle Lake	Colorado	Texas
31. Uintah County	Vernal	Uintah	Utah
32. Black River Falls	Black River Falls	Jackson	Wisconsin
33. Elroy	Elroy	Juneau	Wisconsin
34. Lancaster	Lancaster	Grant	Wisconsin
35. Menomonie	Menomonie	Dunn	Wisconsin